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AMERICAN Cinematographer

Magazine Of Motion Picture Photography And Production Techniques

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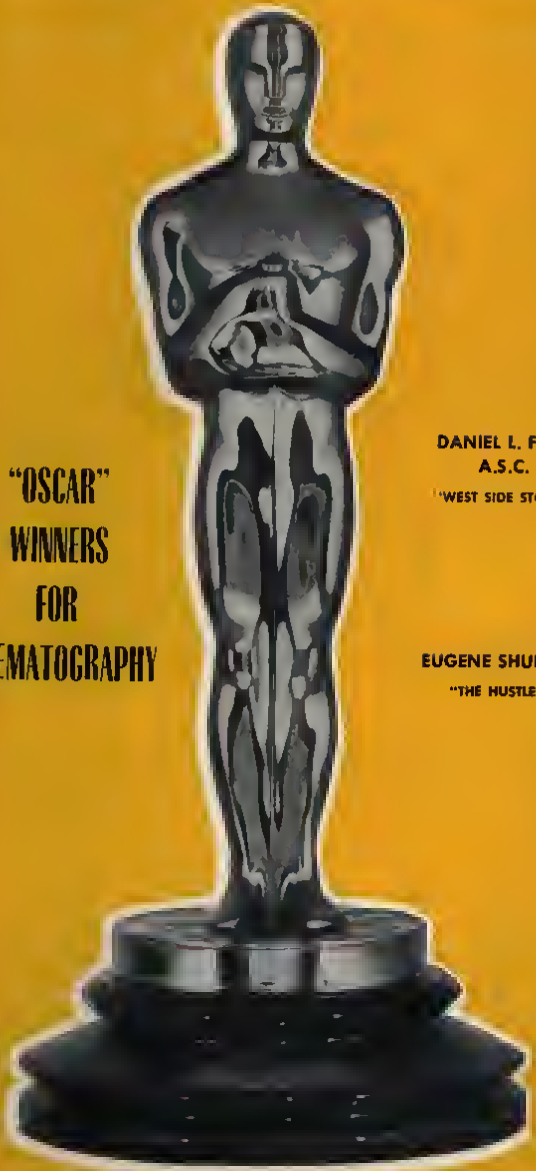

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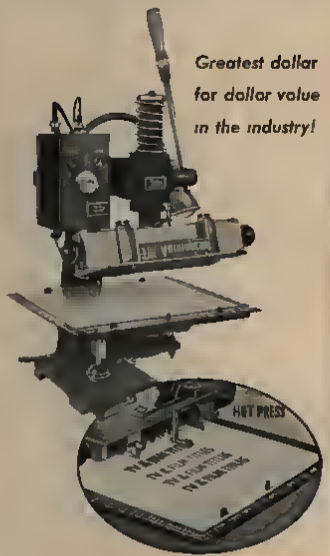

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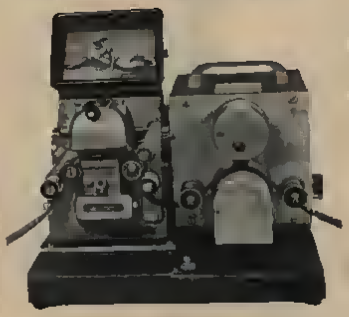

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April, 1962 — Vol. 43, No. 4

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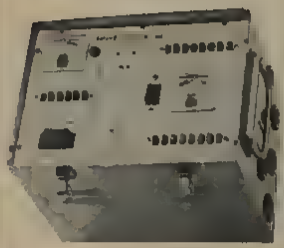

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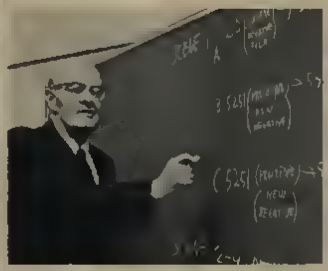
INDUSTRY NEWS

News briefs of industry activities, products and progress



DONALD E. HYNDMAN, manager Eastman Kodak's motion picture film department, explains why company's new 35mm color negative has less grain, better color quality

Hyndman Guides Tests of New E-K Color Negative In Hollywood

Donald E. Hyndman, head of Eastman Kodak Company's professional motion picture film department in Rochester, N.Y., was in Hollywood last month overseeing tests being conducted by studios and film laboratories with company's new color negative film.

With supplies of negative promised for mid-summer and of the release print stock for end of year, studios are gearing future color productions accordingly.

The new color films will require no change in processing routine over that used for the present E.K. 35mm color films, Hyndman said, adding that the new negative had the same ASA speed as the present stock, but finer grain and definition, also it is less blue and has better balance in the red. The new color film, Hyndman pointed out, will make possible greatly improved results in wide-screen color productions.

•

Effects For 70mm Cinerama

Lin Dunn, A.S.C., head of Film Effects of Hollywood, has been signed by Cinerama to design and construct a 70mm optical and contact registration special effects printer for use in printing and compositing special photographic effects for 'Journey To The Stars," special 70mm ultra-wide screen film to be shown visitors at the Seattle World's Fair. Printer is said to be first of its type ever constructed.

•

Dry Processor For Films

A completely dry process that does away with chemicals and does not require absolute darkness for safe and uniform processing, was demonstrated last month at M-G-M studios in Culver City. Known as the Kalvar process, it is said to be a time saving method for making release prints for TV. M-G-M and Kalvar are associated in developing and marketing the process and will continue research and development to further improve the process.

•

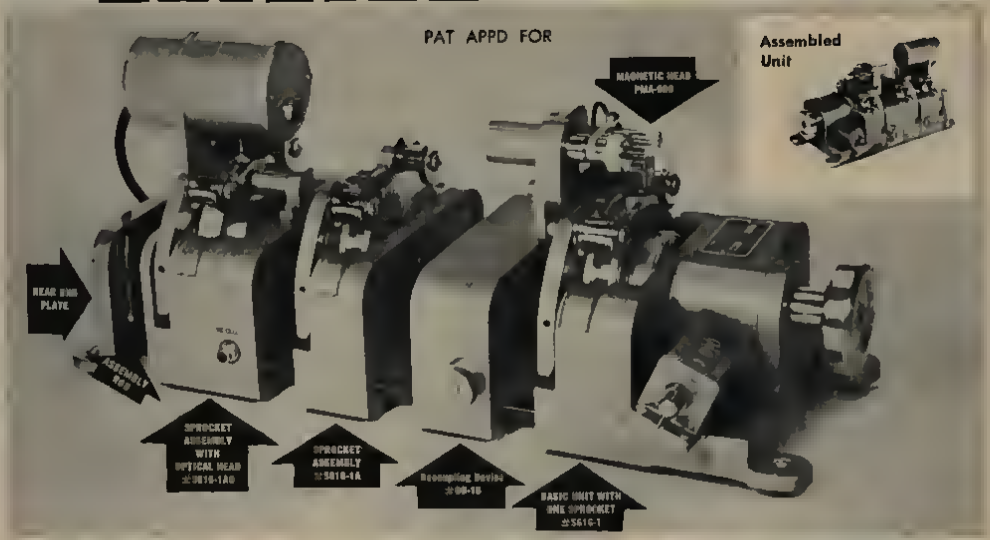
LIGHTING THE WAY—W. A. Hankins, Vice President of the Mole Richardson Company, Hollywood, instructs session in set lighting for cinema students. More than $150,000 worth of equipment and enough light power to brighten a good portion of the campus was demonstrated during the class, which was co-sponsored by the SMPTE and the Department of Cinema at University of Southern California

Novel Arc Light Unit

Winton Hoch, A.S.C., who is directing the photography of "Five Weeks In A Balloon" at 20th Century-Fox, is using a radically-different arc lamp on some of the sets as well as on some exteriors. Known as the Kansas Super 200, it is a modified 200-amp arc with the housing completely enclosed to permit use of lamp where winds prevail. Latter feature also makes it practically sound proof — the feature which is said to have attracted Hoch

Continued on Page 204

ANOTHER FIRST BY PRECISION! PRESENTING THE UNITIZED SYNCHRONIZER



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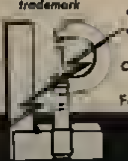

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INDUSTRY NEWS

Continued from Page 202

to its use. It was originally designed for use on insert cars and on sets involving wind machines

•

GOING OVER PLANS for SMPTE's forthcoming convention in Los Angeles April 30 to May 4th, are, from left, Program Chairman Ed Ancona; Local Arrangements Chairman Ralph Lovell, and Convention Vice-President Harry Teichbaum. Society's 91st convention will be devoted to advances in color motion pictures and color television, and will be held at the Los Angeles Ambassador Hotel.

New ASA Motion Pictura Standard

Nomenclature for motion picture film, including areas of negative, positive and reversal films in both black and-white and color, is specified in a newly revised American Standard approved and published by the American Standards Association. Title is "American Standard Nomenclature for Motion Picture Film Used in Studios and Processing Laboratories, PH22 56-1961. It replaces an earlier standard approved in 1947 and takes into account new terminology and definitions applied to motion picture film An index provides easy reference to all definitions Copies are available from the Association, Dept. P 268. 10 East 40th St., New York 16, N.Y. Copies are 70¢ each.

•

Naw, Thin-Basa Kodak Film

A new, thin-base, high-speed color film, which enabled 590 feet of it to be loaded onto a normal 400-ft. spool, was used in a pilot observer camera to record astronaut Glenn's reactions on his recent orbital flight

Film is Kodak's 16mm Ektachrome ER on .0025-inch Estar base. Designed originally for general scientific and technical use, with an ASA exposure index of 160, the film can be used under low light levels or in high-speed cameras.

Nawsfilm Workshop Slatad

The second annual "learn by shooting" newsfilm workshop, sponsored jointly by the National Press Photographers' Association and the U. S. Air Force, will be held in Orlando, Florida, April 10 to 13.

A faculty of outstending newsfilm specialists has been lined up by workshop Director Don Heilmann and includes Robert Shafer, News Director, WRCV, Philadelphia; Jack Fern, News Director, KDKA-TV, Pittsburgh; Dick Hance, Photo Chief, WGN-TV, Chicago; Joe Vadala, TV news cemeraman with NBC-TV, New York: Howard Bach, Exec Editor, National Television News, Detroit.

The four day around the-clock program will include lectures, story assignments in the local community, film editing and critiques by faculty members.

The workshop is open to 10 fully participating civilian students only. However, there will be provision for unlimited numbers of "observers," who will participate in everything except the actual shooting of film There is no fee for military participants and observers Registration fee for civilian participants is $40, and for civilian observers, $25 Inquiries should be addressed to Don Heilmann, 5455 N. 27th St., Milwaukee 9, Wis

•

Cinamatagraphar Ralph Woolsey Briefs Cinema Studants

Ralph Woolsey, A.S.C., who has photographed many of the "Surfside Six" and "Broncho" television films at Warner Brothers Studio, last month addressed students of the Motion Picture Production, Procedures and Services class at the University of Southern California in Los Angeles. Woolsey discussed the subject of coordinating camera and lighting crews and grips on major studio sound stages and pointed out how the same procedures can be beneficial in other fields of motion picture production.

Ralph Woolsey, A.S.C.

The class is co-sponsored by the SMPTE and the USC Department of Cinematography as a service to the motion picture industry. ■

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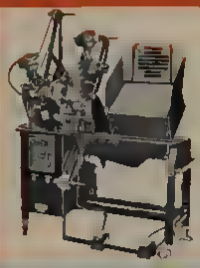

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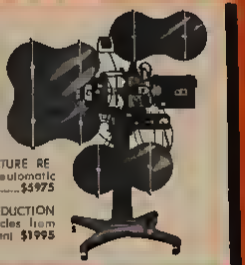

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Some with refrigeration recirculation, air pump variable speed etc

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MODEL K 3 16mm neg/pos/rev reconditioned $1995

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MODEL 118 16mm rev/pos/neg less refr reconditioned $2495

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MAURER NEGATIVE/POSITIVE OPTICAL RECORDER 400' mag, 4 pos mixer amplifier w/magnetic input, twin track modified G Prime galvanometer power supply, cases Model D Value $7500 excellent condition $3995

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AKELEY 35MM VIEWER, sound & composite 5" x 7" aerial image Originally $3000 closeout Good cond ... $195

CECO 35MM VIEWERS, $600 originally condition like new $199 50

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PRESTO HOT SPLICER 16mm film/tape Orig $747 80 reconditioned ... $495

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WHAT'S NEW

IN EQUIPMENT, ACCESSORIES, SERVICES

Custom Camera Modification

Custom modification of the Bell & Howell 16mm GSAP "gun camera" is offered by P. J. Green, 8718 So Denker, Los Angeles 47, Calif. Modifications shown in photo above include a 200 ft magazine, three lens rotary lens turret, and a combination gun-stock and pistol-grip mount for using camera without tripod.

Fireball Reflector

Florman & Rabb, Inc., 68 West 45th St., New York 36, N.Y., has been named a distributor of the "Fireball" reflector, which is fabricated of two pressed aluminum sheets bonded to plastic materials and joined together at all four sides to form an envelope. When inflated slightly, envelope "bellies out" resulting in a spreading of the reflected light beam. The "Fireball" is considerably lighter in weight than conventional solid panel reflectors and takes the same type yoke mounts. List price is $250.

Source of Blood and Paste

Mole Richardson Company, Hollywood, manufacturers and suppliers of lighting equipment and a wide variety of accessories and production needs for the film industry, offers two unique products. The first is M-R Peel Paste for applying wall coverings on sets, and M-R Floor Paste for floor coverings. Materials attached with either product may be easily and quickly removed and the surfaces re-used for years without refinishing. Both pastes are colorless, odorless, water-soluble, and do not discolor the materials applied.

Still another unique product is imitation blood for use in motion picture scenes. Product is available in two varieties: one for B&W photography, the other for color. Both are water soluble vegetable cellulose compounds and are easily washed from any materials. A further feature is said to be the realistic "dripping" action of the material, resembling that of real blood in the coagulating stage.

Camera Car Platforms

Carter Mfg Co., 1229 S E Division St., Portland, Oregon, is leading manufacturer of car-top platforms for photographers. Company's popular line of Car-Pac platforms are constructed of polished aluminum and spar-varnished hardwood. Total deck area is over 22 sq. ft. Prices, $165 to $225.

Continuous Film Processors

Available for delivery in June, a new line of low-cost stainless steel continuous film processors is announced by Photographic Instrumentation Development Co., 19458 Ventura Blvd., Tarzana, Calif. Available in two models—one for 35mm and 70 mm films, the other for 16mm and 35mm films—units will process black-and-white negative, positive, and reversal films. Compactly designed, units occupy 20" x 60" of floor space and have a processing capacity of 6 feet per minute. Soon to be announced is company's color film processor.

Gaffer Tape in Larger Rolls

Lewel-Light Photo Engr., 429 W 54th St., New York, N.Y., announces its Gaffner-Tape is now available in larger rolls, 30 yards in length. List price is $3.95.

Magnetic Film Striper

S.O.S. Photo-Cine-Optics, Inc., 602 West 52nd St., New York 19, N.Y. offers a compact table-top magnetic film striper that applies a pressure sensitive adhesive stripe to 8mm and 16mm films. Tradenamed the Dunning Animatic Striper, it is manually operated, has 400-ft. rewind and take-up arms, and weighs only 5 pounds. It will lay stripe between the film perforations and edge of 16mm films, or intermittently place strip on any desired section of film. List price is $198.00. Hundred-ft. spools of 30 mil stripe are $1.50; 50 mil, $1.60; and 100 mil, $1.75.

New Bolex 8mm Camera

Paillard, Inc., New York, N.Y., announces the new Bolex H-8 Rex 8mm motion picture camera, which incorporates all the advanced features of the finest 16mm cameras. It takes 100-ft. rolls of film, has a 3-lens turret, registration claw in the film movement, camera speeds from 12 to 64 fps, variable shutter, single-frame device, and film rewind. Equipped with three Switar lenses the H-8 Rex sells for $650.00.

Arri Intervalometers

Available for immediate delivery in four standard models is new Master Intervalometer for use with either 16mm or 35mm Arriflex cameras. This programming and control instrument operates camera's single-frame drive, lights, and related equipment in making time-lapse motion pictures. Framing rates range from 1 sec. to 25 min. Automatic exposure times of 1/10, 3/10, or 9/10 sec., or ¼ or ½ sec. are obtainable when the standard single-frame dirve is used. Special drives permit other exposure times. Equipment will control light volumes up to 1500 watts. Arriflex Corp. of America, 257 Park Ave., South, New York 10, N.Y. ■

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Technical Book Source

S.O.S. Photo-Cine-Optics, Inc., 602 W. 52nd Street, New York 19, N.Y., offers a new 16-page booklet, "The S.O.S. Bookshelf of Technical Books," which lists the many volumes available from the company on motion picture and television production techniques. Copies are free.

•

Titles and Effects

"What We Do On Film" is intriguing title of booklet issued by Ray Mercer & Company, which illustrates and describes the many services the company offers independent and major studio producers of TV and theatrical motion pictures. These include inserts, water shots, miniatures, animation, trick shots, matt paintings, titles, and optical effects. Copies are free to qualified potential users of Mercer service. Address request on your business letterhead to company at 4241 Normal St., Hollywood 29, Calif.

•

Equipment Data Sheets

A folder of loose leaf data sheets illustrating and describing all the motion picture and audio-visual equipment presently available from the company, is offered by Cinekad Engineering Co., 763 Tenth Ave., New York 19, N.Y. Described items include: tripod dollies, tripod accessories, triangles, camera shoulder pods, mike booms, sync motor drives for 16-35mm projectors, sync motor drives for cameras, blimps, hi-hats, etc.

•

Fluorescent Light Data

A new filter table for use in shooting color pictures under fluorescent and mercury light is an important feature of lighting Bulletin 0-241 issued by the Lighting Products Division of Sylvania Electric Products, Inc., 730 - 3rd Ave., N.Y. 17, N.Y. Table was compiled as aid to color photography because conventional color temperatures are not a reliable guide under fluorescent or mercury lights the company states.

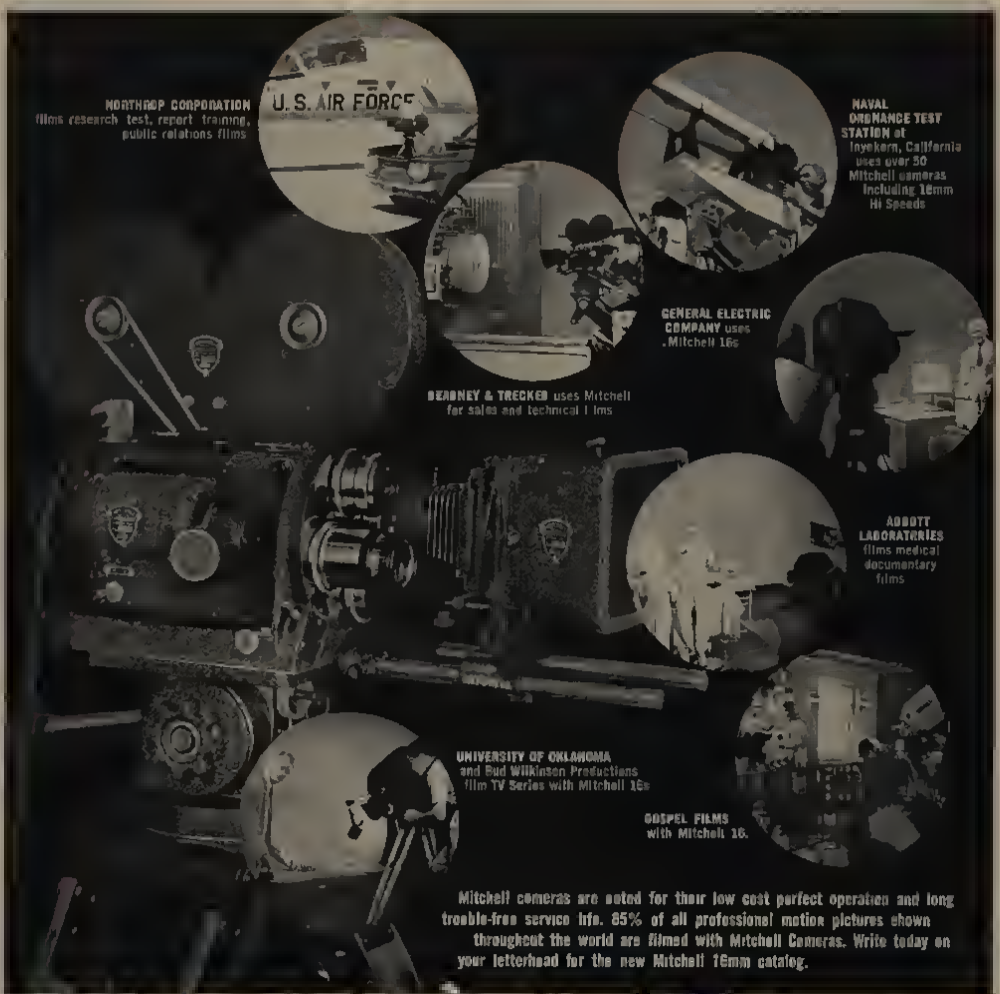
•

A&B Editing Guide

Movielab, 619 W. 54 St., New York, N.Y., offers an excellent 16-pg. booklet entitled "The Movielab Guide To A & B Editing." Well illustrated and highly explanatory, it's a must for film makers not yet versed in this editing technique. •

NEWS FROM MITCHELL CAMERA

7 ways to make more films at lower cost. *It is remarkable but true... as proven by the photographs on this page... that a single Mitchell camera can be used for a virtually unlimited range of film making assignments. No other camera today can meet such a broad range of exacting film making. The versatile speed of the Mitchell, ranging from stop motion to a high speed of 128 frames per second, plus its exclusive time-saving operating features are but a few of the reasons for its wide use. As seen on this page, the Mitchell is the only 16mm camera designed for complete range cinematography of fine films.*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ASC's RESEARCH COMMITTEE REPORTS

Nine important technical recommendations completed during Committee's first six months activities.

Fig. 1

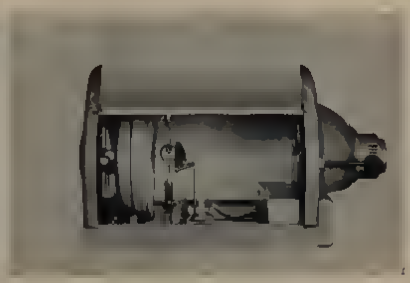

Fig. 2

THREE XENON light sources (Fig. 1) and application in a conventional projector lamphouse (Fig. 2). Use of Xenon lamp in theatre projectors greatly improves quality of cinematography on screen.

AT THE REGULAR monthly meeting of the American Society of Cinematographers last month, Walter Beyer, Chairman of the Society's Research and Educational Committee rendered a report on the Committee's first six month's activities. Beyer amplified and explained the progress made by the Committee as outlined in its first Activity Report presented to the President and Members of the Board of Directors of the A.S.C.

Cited were the first nine projects or A.S.C. Recommendations undertaken by the Committee, described as follows:

A.S.C. RECOMMENDATION #1
"Screen brightness and color temperature levels for review rooms"

A.S.C. RECOMMENDATION #2
"65mm camera aperture dimensions"

A.S.C. RECOMMENDATION #3
"Focusing chart for daily rushes"

A.S.C. RECOMMENDATION #4
"Safe action and safe title areas for 35mm film for tv"

A.S.C. RECOMMENDATION #5:
"35 camera aperture dimensions"

A.S.C. RECOMMENDATION #6
"Improvements for black and white film presentation on tv" (DC-restoration action)

A.S.C. RECOMMENDATION #7:
"Double frame camera aperture dimensions"

A.S.C. RECOMMENDATION #8
"Aperture considerations and release methods for flat and anamorphic theatrical pictures on tv"

A.S.C. RECOMMENDATION #9:
"35mm Cinerama camera aperture dimensions"

Following a brief discussion of the above projects, Beyer then reported on an interesting subject of the Committee's Educational program. This dealt with the recent development in Germany of Xenon high-pressure arc lamps for motion picture projectors. Utilization of this new power source is now being undertaken in this country. Beyer reported, and explained that this development is of tremendous interest to Hollywood's Directors of Photography, because of the greatly improved quality it will render their photography on motion pictures screens wherever used.

The new Xenon light source, shown in Fig. 1, is best described as a "captivated arc," having a constant color temperature of 6,000° K at any setting within its brightness range. Once the lamp is installed and optically aligned in a projector lamphouse, Beyer explained, it requires no further attention during its lifetime—estimated at 1,600 hours. A typical lamphouse installation is shown in Fig. 2.

Even though use of this lamp is presently limited for projection to theatre screens up to 32 feet in width, it represents an ideal, constant light source ideally suited to projectors used in review rooms in studios and laboratories, Beyer pointed out, adding that it already is being put to this use in European film production centers.

The educational phase of Beyer's talk was augmented by projected slide illustrations. One interesting adjunct to use of the Xenon lamp, which was illustrated, was a novel honeycomb light condenser, which was described as an optical device permitting a light distribution of 92% or better, contributing further to improved rendition of cinematography on the screen. ■

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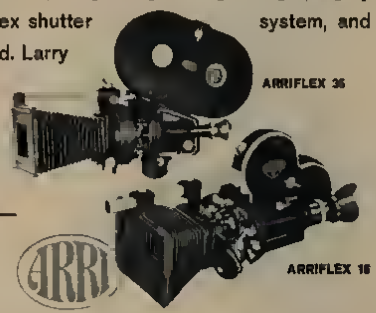

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Q & A

Technical Questions and Answers

Q.—*Before purchasing a splicer, I would like to know what is the principle advantage of the hot splice? What type of cement is used for hot splices, or is any used at all? I read somewhere that the glossy side of the film should also be "roughened up" for a good splice. Is this true?*—P. R. G., Wisconsin Rapids, Wisc.

A.—Hot splicers have several advantages over conventional type splicers: increased splicing speed, make initially stronger splices, and produce splices which last longer when subjected to repeated flexing in printer or projectors. Regular splicing cement for the type of film being spliced, may be used with a hot splicer. The heating feature of the hot splicer merely speeds up the welding process effected by the cement and film. As far as we know, for the film bases currently in use, there is no particular need for "roughening up" the glossy side of the film when preparing it for a splice.

Q.—*We produce a weekly TV film program. Our library of films has been subjected to the Peerless Treatment. We would like to know whether cleaning these films every time they come back from a TV studio is advisable, or if such repeated cleansing might destroy the benefits of the Peerless Treatment.* — A. S., Marathon, Wisc.

A.—As the Peerless Film Processing Corp. is located here in Hollywood, we went direct to them for the answers to your problem. We were advised that frequent cleaning of treated films will not affect the Peerless Treatment as such. However, in their opinion, too frequent cleaning of a film especially when it is cleaned wet, may tend to dry out the film eventually regardless of any preservative treatment applied to it. It is suggested that for a safe cleaning job, a piece of soft velvet be used and made just damp enough to remove dust particles from the film surfaces.

Q.—*I have two questions: 1) in shooting double-system when only one camera is used, what is the technique for filming a lip-sync reaction shot, i.e., following a medium closeup shot of person speaking, then we cut to an over-the-shoulder shot with the camera directly on the person he is speaking to, but with no break in the recorded dialogue as the camera angle changes?*

2) what is your definition of a "two shot?"—G. R., New York, N. Y.

A.—1) The procedure is exactly as you have outlined in your question. However, when the two shots are edited, the sound track of the person speaking is used to cover both shots; thus it is unnecessary to try to match up two separate sound takes of the one conversation. The over-the-shoulder shot can be filmed with the speaker repeating his lines, to insure proper timing of player's reaction, which may or may not be recorded simultaneously. If recorded, this part of the track is discarded and the track of the initial dialogue used in editing.

2) A two-shot is a closeup of two people, head and-shoulders or waist length.

Q.—*What is "Super-Dynamation" and how was it used in the British film, "The Mysterious Island?"* — G. H., Lakemba, N.S.W., Australia.

A.—Super-Dynamation is a new screen process for special visual effects developed by Ray Harryhausen. The difference between Super Dynamation, which has been superseded by an improved process know as Dynamation 90, is comparable to the difference between a manned orbital flight and merely shooting a satellite into space, Mr. Harryhausen explains.

The process, according to its inventor, involves the use of two 45° prisms juxtaposed to guarantee true registration of subjects for any given perspective. The system also involves a new multiple exposure technique called Dyno-Synchronization, which insures a realistic and accurate projection of images of varying sizes and proportions with a maximum of definition and depth of field of vision.

We have no information on how the process was used in "The Mysterious Island;" however, the improved Dynamation 90 process effects may be seen in the Charles Schneer production, "Jason and the Golden Fleece," currently in release.

Q.—*I am planning to buy a 16mm camera and have been considering the Bolex H-16 Rex and the Pathe Webo M reflex. Can you give me an opinion of the two? Would you compare the special features of each, as I am wondering which camera would suit me best.*—E. J., Lowell, Mass.

A.—This column never makes recommendations on cameras or other equipment for the simple reason that the needs of different people vary. Both the cameras mentioned are good 16mm cameras, but you must decide for yourself which camera best suits your needs. This you can do by trying them out with a load of film. If your local dealer feels you are a genuine prospect for the purchase of a camera, we are sure he will gladly arrange for you to take out each camera and test it. There is no better way to learn for yourself the qualities and features of each camera and to determine which is best suited to your needs.

Q.—*I would like to know how to use a Norwood incident light meter to determine exposure where there is backlight in the scene.*—R. W., Fon du Lac, Wisc.

A.—To take a reading of a backlighted subject with an incident light meter, the meter should be used in the normal manner—that is, at the position of the subject, and with the light-collector aimed at the camera lens.

Q.—*I see increasing use made in photographic literature of the term "camera angle." Exactly what does camera angle mean?*—L. K. N., Colorado Springs, Colo.

A.—The term merely refers to the camera's view of the subject or its relation to the principal planes of the scene. ■

GOT A PROBLEM?

Need professional advice on a picture-making problem, about equipment, film or cinematography? Reader's questions are invited and will be answered by mail when accompanied by a stamped, addressed envelope for reply. Questions and answers considered of general interest to other readers will be published here each month.

Address your questions to the "Question & Answer Editor," American Cinematographer, P.O. Box 2230, Hollywood 28, Calif.

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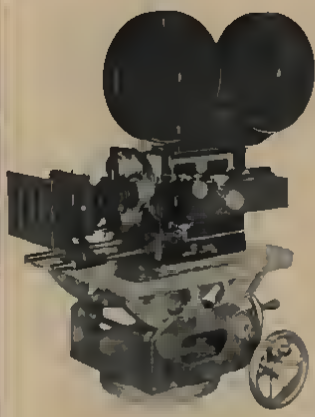

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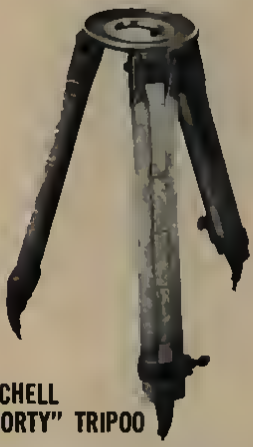

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BEHIND THE CAMERAS

WHAT THE INDUSTRY'S CAMERAMEN WERE SHOOTING LAST MONTH

BY MARION SUTTNINS

NOTE: Asterisks following titles indicate television film productions

BILTMORE STUDIOS — N.Y.

JACK PRIESTLY, "Naked City"* (Screen Gems)

BIOGRAPH STUDIOS — New York

GEORGE STOETZEL, ASC, 'Car 54 Where Are You?"*.

CASCADE PICTURES

ROY SEAWRIGHT, Commercials*

HENRY FREULICH ASC, Commercials*

COLUMBIA STUDIOS

SAM LEAVITT ASC "Diamond Head" (P' Vision, Eastman color, shooting in Hawaii) with Charlton Heston and Yvette Mimieux. Guy Green, director

IRVING LIPPMAN, "Route 66"*

MALBY GERTSMAN, ASC, Commercials*.

BURNETT GUFFEY, ASC, Commercial*

IRVING LIPPMAN 'Safe at Home" (Shooting in Flo) with Roger Maris and Mickey Man tle Walter Doniger, director

CHARLES WELBORN, "Dennis the Menace"*

FRED GAILEY ASC "Hazel *

GEAT ANDERSEN, ASC, 'Donna Reed Show"*

FRED YOUNG, "Lawrence of Arabia" (Super P'Vision, Eastman color; Horizon Pictures (GB) , Columbia release shooting in Spain) with Alec Guinness and Anthony Quinn David Lean, director

DESILU—Cahuenga Studios

SID HICKOX, ASC, "The Andy Griffith Show"*

ROBERT DE GRASSE, ASC, "Danny Thomas Show"*

HENRY CRONJAGER, "Joey Bishop Show"*

DESILU—Culver City

CHARLES STRAUMER, "The Untouchables"*.

LOTHROP WORTH, ASC, 'The Real Mc Coys"*

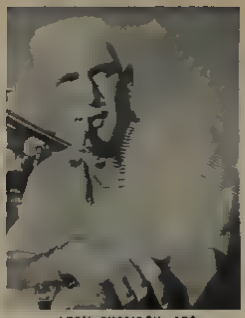
DESILU—Gower Studios

FRANK CARSON, "Window on Main Street*'

TED VOIGHTLANDER, 'Ben Casey"*.

FILMWAYS — MGM

THOMAS TUTWILER ASC Commercials*



LEON SHAMROY, ASC

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MORRIS HARTZBAND, 'The Defenders"* (CBS) Boris Sagal and Buzz Kulick, directors.

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ARTHUR ORNITZ, Twist Featurette (Vanguard Prods)

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ROBERT MORENO, 'Adventures of Ozzie & Harriet"*

ROBERT HAGER, "Perry Mason"*.

ARCH DALZELL, "Mister Ed"*

HARRY WOLF, 'Hennessey*.

Continued on Page 221

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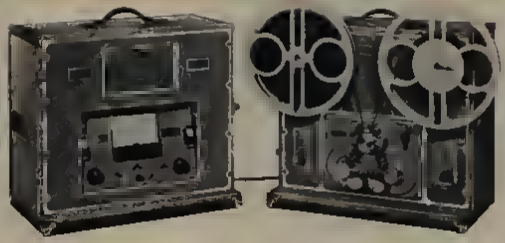

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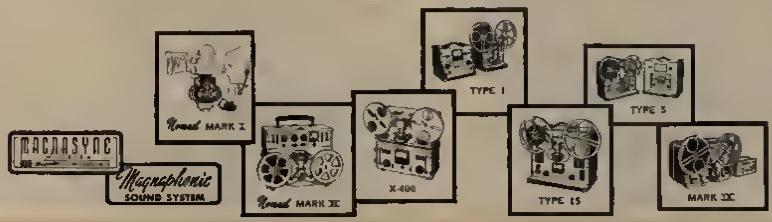

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BEHIND THE CAMERAS

Continued from Page 218

GOLDWYN STUDIOS

MEREDITH NICHOLSON, "The New Breed"*.

TED MCCORD, ASC, "Two for the Seesaw" (Mirisch-Robert Wise, Seven Arts Prod., P'Vision) with Robert Mitchum and Shirley MacLaine. Robert Wise director.

LIONEL LINDON, ASC, "The Manchurian Candidate" M C Prods with Frank Sinatra and Laurence Harvey. John Frankenheimer director.

INDEPENDENT

ROBERT BURKS, ASC, "The Birds" (Alfred Hitchcock Prods., shooting in Santa Rosa) with Rod Taylor and Jessica Tandy. Alfred Hitchcock, producer-director.

ALAN STENSVOLD, ASC, "Here's Hollywood"* (NBC, shooting in Europe)

CARL KAYSER, "No Man is an Island" (Gold Coast Prod. for U I release, shooting in the Philippine Is.) with Jeffrey Hunter, Richard Goldstone and John Monks, Jr. producer-directors.

WILLIAM THIONO "The Slime People" (Hutton-Robertson Prods.) with Robert Hutton and Les Tremayne. Robert Hutton, director.

ALEX PHILLIPS, "The Forsaken Garden" (Color, shooting in Mexico City) with Merle Oberon and Steve Cochran. Richard Rush, director.

SOL NEGRIN, MIKE ZINGALE, BOB DOWNEY, "Candid Camera"*

KEYWEST STUDIOS

FRED WEST, ASC, (Family Films) Series of Religious pictures

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MILTON KRASNER ASC, "How the West Was Won" (MGM Cinerama Prod., Cinerama and MetroColor, Episode 5) with John Wayne and Debbie Reynolds. Henry Hathaway, director.

JAMES WILSON "The Password is Courage" (Andrew & Virginia Stone Prod., shooting in England) with Dirk Bogarde and Nigel Stock. Andrew Stone, producer-director.

EUGENE SHUFTON, "Captain Sinbad" (Technicolor, King Bros. Prod., shooting in Munich) with Guy Williams and Heidi Bruehl. Byron Haskin, director.

WILLIAM DANIELS ASC, "Billy Rose's Jumbo" (Euterpe Prod., CScope & Metrocolor) with Doris Day and Stephen Boyd. Chuck Walters, director

ROBERT PITTACK, ASC, "Father of the Bride"*

HARKNESS SMITH, "Dr Kildare"*.

WILLIAM SPENCER, "Cain's Hundred"*

PARAMOUNT STUDIOS

W WALLACE KELLEY, ASC, "It's Only Money" (York Picts Jerry Lewis Pictures Corp.) with Jerry Lewis and Joan O'Brien. Frank Tashlin, director

FRANK PHILLIPS, "Have Gun Will Travel"*

JOSEPH RUTTENBERG, ASC, "Who's Got the Action?" (P'Vision; color; Amro Prod.) with Dean Martin and Lana Turner. Daniel Mann, director

WALTER CASTLE ASC, HASKELL BOGGS, ASC, "Bonanza"*

JOHN NICHOLAUS, JR., "Outlaws"*.

PARAMOUNT SUNSET STUDIOS

FLEET SOUTHCOTT, "Gunsmoke"*

LESTER SHORR, ASC, "Pete and Gladys"*.

REPUBLIC STUDIOS

GILBERT WARRENTON ASC, "Survival" (American International) with Ray Milland and Jean Hagen. Arnold Houghland, director.

HOWARD SCHWARTZ, "The Law and Mr Jones"*

CHARLES BURKE "Target the Corruptors"*.

WILFRID CLINE, ASC, "Robert Taylor Detectives"*.

REVUE STUDIOS

RUSSELL METTY, ASC, If a Man Answers" (Ross Hunter Prods., Eastman Color) with Sandra Dee and Bobby Darin. Henry Levin, director

CLIFFORD STINE, ASC, The Ugly American" (Eastman Color) with Marlon Brando and Sandra Church. George Englund, producer director

RAY RENNAHAN, ASC, Wells Fargo"*

DALE DEVERMIAN, JOHN RUSSELL, ASC, "Alcoa Theatre"*

NEAL BECKNER, "Alfred Hitchcock Presents"*.

BENJAMIN KLINE, ASC, JOHN RUSSELL, ASC, "General Electric Theatre"*

JOHN WARREN, ASC, "Going My Way"*.

RAY FLIN, "It's A Man's World"*

JOHN RUSSELL, ASC, ELLIS THACKERY, ASC "Bachelor Father"*

BENJAMIN KLINE ASC, "Thriller"*

DALE DEVERMAN "Tall Man"*

FRED MANDL, ASC, ELLIS THACKERY, ASC, "Frontier Circus"*

NICK MISURACA, ASC "Jack Benny Show"*

ELLIS THACKERY ASC, The Plainsman"* (pilot).

RUSSELL HARLAN ASC, "To Kill A Mockingbird" (Pakula Mulligan Anthony Prods.) with Gregory Peck and Mark Badham. Robert Mulligan, director

JOSEPH LASHELLE, ASC, "A Child is Waiting" (Stanley Kramer Prods.) with Burt Lancaster and Judy Garland. John Cassevetes, director

ROBERT GOUGH, "Checkmate"*.

Continued on Page 253

BOB BURKS, ASC

He's back again with Hitchcock, photographing "The Birds" starring Rod Taylor and Tippi" Hedren

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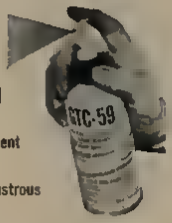

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"THE FOUR

By HERB A. LIGHTMAN

ONE OF THE MAJOR sets seen in the early part of "The Four Horsemen of the Apocalypse," photographed by Milton Krasner, ASC. Some of the lights used to illuminate the set may be seen, as well as the mike boom extending overhead into the set at left. Here Director Vincente Minnelli (center foreground) briefs the players before ordering the camera to roll.

ACADEMY AWARD WINNER Milton Krasner, ASC ("Three Coins In The Fountain," 1954) photographed "The Four Horsemen" in CinemaScope with Pana vision lenses, using Eastman Color negative.

"THE FOUR HORSEMEN of the Apocalypse" is interesting photographically for a number of reasons. First there is the Paris locale in which the story is laid. Scenes that could not be filmed there for one reason or another were subsequently staged and photographed at M-G-M studios in Hollywood. This is something that puts extra demands on the photographer in that he must carry over to the sound stage filming phase all the mood, lighting style and matching of camera angles of the photography done in Paris.

Second, there is the pictorial mood established early in the picture which permeates the entire production—a mellow melange of light and shadow artistically applied to point up sharp dramatic moments in the story—as in the scene where the wife (Ingrid Thulin) is surprised outside her dimly lit doorway one night by her husband (Paul Henreid), until that moment believed lost in the war.

In the entire filming of "The Four Horsemen," Director of Photography Milton Krasner, ASC, has skillfully combined the aesthetic with the functional to produce visually a consistently credible pictorial continuity on a vast scale.

In bringing the epic Vincente Blasco Ibanez novel to the screen for the second time, M-G-M wisely and most successfully up-dated the former World War I story to the era of World War II, a period considerably fresher and more poignant to the memory. While the story is played against the tremendous canvas of global war, it is essentially a searching study of human beings with their strengths and weaknesses caught up in the brutalities of a world-shaking cataclysm. The personal conflicts arise from the dilemma of a heretofore tightly-knit Argentine family, some of whom espouse the Nazi purpose while others remain loyal to the allied cause.

Delayed by another assignment, Krasner joined the "Four Horsemen" company in Paris after veteran French cameraman Georges Perinal had already started to shoot location exteriors for Director Vincente Minnelli. From this point on, Krasner and Perinal worked in closest cooperation in photographing scenes for the picture in the student quarter of St. Germain, the Sorbonne University, Sacre Coeur cathedral in Montmartre, Palace of Versailles, and the beautiful chateau countryside with

HORSEMEN"

Calar phatagraphy and an up-dated story line give this remake of the 1920 Metra classic a slick new look.

its ancient stone castles and arched Roman aqueducts.

Filming in Parisian locations was not without its problems. Cooperation could he ohtained only in part and the tahoos the company faced were many. No Nazi flags could he hung from huildings or trees. Wearing of Nazi uniforms hy extras out of camera range was forhidden. Uniform jackets had to be removed while lunching or resting hetween scenes. No vehicles with Nazi insignias were permitted to remain on higbways between shots.

Procuring Nazi vehicles and equipment was, in itself, an almost insurmountahle problem. When Paris was freed from occupation, the French were so impassioned that everything with the Nazi taint was destroyed or hurned. Therefore all such equipment required for the picture had to be obtained elsewhere and shipped to Paris.

In order to avoid interference by crowds, the occupation sequences were photographed on Sunday mornings, when the normally hustling boulevards and streets were practically deserted. For the same reason, August was selected as the ideal time to photograph scenes of Nazi troops entering Paris. This is the month when Parisians, themselves, evacuate their city almost enmasse for holidays at the seashore and other resorts.

SOME OF THE most exciting scenes for "The Four Horsemen of the Apocalypse" were photographed in the Verennes Metro (subway) of Paris. As the dolly mounted camera stands ready to roll, Director Vincente Minnelli demands plenty of action in the next take

THE DOLLY-MOUNTED camera follows Ingrid Thulin, Glenn Ford's co-star in "The Four Horsemen of the Apocalypse," as she walks along Paris' Left Bank. Note small lamps mounted above camera to provide fill light

The citizens of Paris, not unaccustomed to a motion picture company filming on their houlevards, displayed only normal curiosity until one morning when a scene was scheduled to be played at a sidewalk table of the Cafe de la Paix, in the shadow of the Paris Opera. Suddenly there was tension in the air as impeccably uniformed Nazi officers mingled with pretty girls and clattering tanks with Swastika insignia rumbled through the streets. To most Frenchmen this was not make-believe. It caused them to stop in shocked, indignant surprise, recalling poignantly the emotional impact of the occupation. Long dormant, it had been aroused that day by the official announcement that German troops were to train on French soil for the first time since World War II in the interest of Europe's common defense. While this antagonism has since simmered down, at the moment it was a heated issue, and it directly affected production of the film.

Permits for further filming of occupation scenes on the streets of Paris were abruptly cancelled.

Continued on Page 250

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A review of the photographers and the photography of the motion pictures

NOMINATED FOR ACADEMY AWARDS

IT HAS LONG BEEN CONSIDERED that the nomination of a motion picture by the Academy of Motion Picture Arts and Sciences for Achievement in Photography logically establishes that picture one of The Best Photographed Pictures of the year. On this and the following pages, we present condensed reviews of the photography of the ten motion pictures—five black and white and five color—so nominated this year, along with photos and brief biographical data on the cinematographers who directed the photography of them.

The *best* of these ten best pictures, of course, is decided by the Academy's vote that results in an Oscar award for the best photographed picture in each category.

Because this issue of American Cinematographer will go to press before the Academy Awards winners are announced April 9, we shall be unable to name the cinematography award winners here.—EDITOR

Jack Cardiff
Photographed "FANNY"

Striking location photography in Eastman Color around colorful Marseilles elevates the visual treatment of "Fanny" to a class by itself. Noteworthy is the photography of the waterfront sequences at dawn and at dusk where remarkable consistency of quality was achieved. Interiors are equally well photographed in moods consistent with the locale and the nostalgic theme of the story.

Cardiff who won an Academy Award in 1947 for "Black Narcissus," started in motion pictures as a child actor in 1918. He switched from acting to photography in 1928, was made a Director of Photography in 1946 at the Denham Studios, London. First assignment, "Stairway To Heaven." Branched out into screen direction in 1958, garnered an Academy Award nomination for "Sons and Lovers." Has alternated between cinematography and direction ever since. His photography of "War and Peace" was nominated in 1957 but failed to win. After photographing "Fanny," he directed "My Geisha" and "The Lion."

Ernest Laszlo got his start as a cinematographer at Paramount Studios. This was in 1926 when he went to work as an assistant cameraman. Seventeen years later—in May, 1943—he was made a Director of Photography. Recent pictures photographed by Laszlo include "Inherit The Wind," "The Last Sunset," "Bandido," "Vera Cruz," "Stalag 17," and "Judgement At Nuremberg," his second nomination for an Academy Photographic award. His first was "Inherit The Wind," (1961). As yet he has no Academy Awards to his credit.

In photographing "Judgment At Nuremberg," Laszlo used Eastman Plus X and Eastman Plus XX negative. Photography was in the 185-to-1 aspect ratio. Extensive use was made of the mobile camera to point up movement when vital to the story and to give pictorial emphasis to the otherwise static locale—a small courtroom. Noteworthy also is the way a zoom lens was employed to sharply frame stationery figures in scenes with a dramatic impact not otherwise possible.

Ernest Laszlo, A.S.C.
Photographed "JUDGEMENT AT NUREMBERG"

Edward Colman, A.S.C.
Photographed "The ABSENT MINDED PROFESSOR"

Crisp high-key lighting and deft handling of photographic elements lend credibility to this hilarious comedy-fantasy. Skill is especially evident in the creation of authentic context for the smooth integration of the many special effects. In many scenes people are suspended on wires. These scenes were expertly lit so the supporting wires would not be visible on the screen.

Colman got his start in the film business in 1924 as assistant cameraman on 2-reel silent comedies. He became a first cameraman in 1927, shot miniature and trick effects for many Norma Talmadge, John Barrymore and Chester Morris films for United Artists. He went to England in 1935 to shoot trick effects for Alexander Korda. Returning to Hollywood in 1938 he switched to photographing dramatic features. He became an operator, was elevated to Director of Photography in 1952 and subsequently shot the "Dragnet" TV film series. He photographed "That's 01" and "30" for Jack Webb, then moved to Disney Studios where he has photographed "Big Red," "Babes in Toyland," "Shaggy Dog," and "Absent Minded Professor," the nominated picture. The latter is Colman's first Academy Award nomination.

CONTINUED

Charles B. Lang, Jr., A.S.C
Photographed **"ONE EYED JACKS"**

A strong factor in "One-Eyed Jacks" is the exterior color photography, which Lang does so well Each scenic composition is imbued with a pictorial quality that suggests an oil painting come to life Yet the photography never once overwhelms nor intrudes upon the dramatic action Compelling camera angles and emphatic closeups play a strong part in complementing the violent surge of the story while at the same time probing deeply into the hearts of the characters

Charlie Lang started in the picture business in 1918 as a laboratory worker at Paramount Studios in Hollywood He became a Director of Photography in 1930 at Paramount, where he remained for a number of years He has a total of 15 Academy Award Nominations to his credit "The Right To Love," 1931 "A Farewell To Arms," 1933 "Arise My Love" 1941, "Sundown," 1942; "So Proudly We Hail," 1943, "The Uninvited," 1944, "The Ghost and Mrs Muir," 1947, "A Foreign Affair," 1948, "Sudden Fear," 1952, 'Sabrina,' 1954, "Queen Bee," 1955; "Separate Tables," 1958, "Some Like It Hot," 1959 "The Facts of Life," 1960, and "One-Eyed Jacks," 1961 Oespite this unusual consistency of making the Nominations list—almost every year since 1941—he has been honored with but a single Academy Award —for "A Farewell To Arms"

'One-Eyed Jacks" was photographed on Eastman Color film in the Vista-Vision 1 85-to-1 aspect ratio

Daniel L. Fapp, A.S.C.
Photographed **"WEST SIDE STORY"**

This year, Daniel Fapp has two pictures nominated for photography—"Wesl Side Story" (color) and "One, Two, Three" (B&W) A tour de force of color photography transforms the original Broadway stage pley of "Fanny" into a flashing, pounding musical drama thet is pure cineme all the way Inspired use of mobile camera, colored lighting and arresting camera angles point up the stylized format ot action and choreography, elevates the photography to high realms of cinematic art

Sparkling camera treatment of "One, Two Three" marked by skillful photography of location scenes that blend readily with studio footage especially mark the photography of this hilerious story No less important is way photographic emphasis is given to small but important details in many scenes, giving the picture much ot its terntic visual impact

Fapp's career began in 1924 as technician at Paramount Studio's lab in Hollywood Gradually he progressed end was made a Direcfor of Photography about 1940 Most of his work has been for Paramount, having shot more than 27 major features there Of these "Desire Under The Elms' (B&W 1958) and Five Pennies (Color 1959) received nominations but were out of the running in the finals Fapp used Eastman Plus X negative for 'One, Two Three" and Eastman Color negative for 'West Side Story" Both pictures were shot in the Panavision 70mm process

Russell Metty, A.S.C.
Photographed **"FLOWER DRUM SONG"**

Russell Metty won the Oscar for best color photography last year for "Spartacus" "Flower Drum Song" is his second Academy Award nomination Photographed in Eastman Color and Panavision 'Flower Drum Songs' photography is purposely slick and glamourous It captures the exotic visual aura of San Francisco's Chinatown in a most effective manner The choice of camera angles and the skilful application of light and shadow to compositions give the locale a larger-than-life aspect against which the musical drama is played

Metty is another camera artist who got his start as a film laboretory technician—at RKO Studios in 1924 He became a Director of Photography in 1936 and for many years worked exclusively at Universal-International Studios Recent pictures photographed by Metty include "Touch of Mink" "The Interns," "By Love Possessed" "The Misfits," and "Flower Drum Song." The nominated picture was photographed in Eastman Color end Panavision The projection of colored light into scenes to enhance composition or to create mood is a most attactive photographic device to be observed in this photographic achievement

Eugen Shuftan
Photographed **"THE HUSTLER"**

Eugen Shuftan is the only non-Hollywood Director of Photography in the Cinematography Nominations this year Born in Breslau, Germany, in 1886, Shuftan emigrated to the United States and subsequently was employed in various film studios both on the West Coast and in New York City, where he has worked for the past several years (As we were going to press, Shuftan was in Europe photographing "Captain Sinbad" for King Brothers, and therefore was unavailable for a photo or comment upon his nomination and biography)

'The Hustler," which he photographed in New York for 20th Century Fox, demonstrates a smoothly professional technique in the photography, with skillful lighting and framing of the camera studiously contrived to point up the smoke-filled, sweat-laden atmosphere of the pool halls, shabby flats and bus stations in which much of the story action takes place The sharply etched black-and-white photography emphasizes the tawdry textures of these locales, and reflects the inexorable hopelessness of the despairing human beings moving within them

Shuftan has no previous nominations nor Academy Awards to his credit Other recent productions which he photographed include "Something Wild," U A, "Le Couple," a French film, 'Les Yeux Sans Visage" and "La Tete Contre Les Murs," also made in France by French studios

Franz Planer, A.S.C.
Photographed **"THE CHILDREN'S HOUR"**

Before Franz Planer was made a Director of Photography at the old UFA Studios in Berlin, in 1932, he had been a German newsreel cameraman with ten years' photographic experience Planar, like many of his countrymen, fled Germany with the advent of Hitler He was brought to Hollywood by Jack Cohen of Columbia Studios, and talent agent Paul Kohner His first notable assignment in Hollywood was photographing Stanley Kramer's "Champion," for which he received his first Academy Award nomination Subsequently he received nominations for the photography of "Death of A Salesman," 1951, "Roman Holiday," 1953, and "The Nun's Story," 1959

He has been honored four times with **Film Daily's** Filmdom's Famous Fives Award received a Look magazine award in 1951, three Hollywood Foreign Correspondent's Golden Globe Awards, as well as several awards from foreign countries

"The Children's Hour" was photographed in black-and white in the CinemaScope format. Of his technique, Planer says "I always aim to photograph the story, not the picture and to have complete freedom to create for each picture my idea of the mood best befitting it and thus underscore the dramatic moments to best advantage '

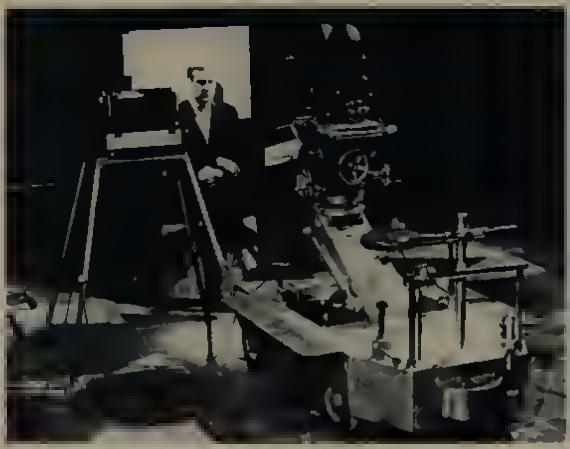
In "The Children's Hour," precisely controlled low-key lighting, unobtrusive camera movement and sharply selective camera angles point up the intrinsically tragic mood of this highly dramatic story Exterior sequences are comparably subdued in treatment as an extension of the overall somber atmosphere established in the interiors

Harry Stradling, Sr., A.S.C.
Photographed **"A MAJORITY OF ONE"**

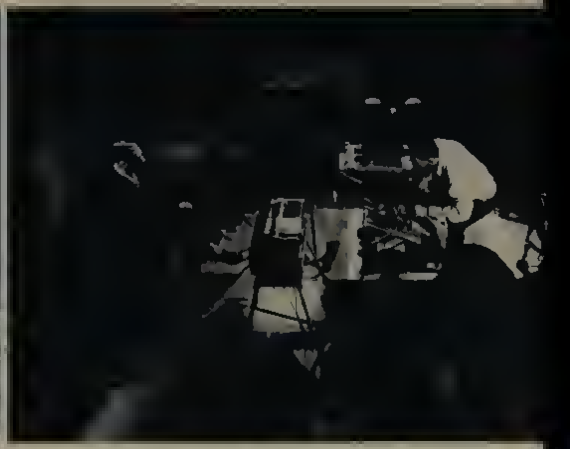
Harry Stradling Sr, who won his first and only Academy Award to date in 1945 for the photography of 'The Picture of Dorian Grey," has been a contender on nine different occasions He has received the Academy's Nomination Certificate for "The Human Comedy," 1943, "Picture of Dorian Grey" 1945 'Barcleys of Broadway," 1949, "A Streetcar Named Desire," 1951, 'Hans Christian Andersen," 1952, 'Guys and Dolls," 1955, "The Eddie Duchin Story," 1956 "Auntie Mame" 1958, and "The Young Philadelphians" 1959

Stradling entered the motion picture business in 1917 as an assistant cameraman in New York He was made a Director of Photography at the old Whitman Bennett Studio in Yonkers in 1920 His work on Hollywood features began at M-G-M Studios in 1946 with "Till The Clouds Roll By which he co-photographed with George Folsey, ASC. After four years at M-G-M he began free-lancing, and thereafter worked in various studios in Hollywood Pictures he recently photographed include "Gypsy" "Five Finger Exercise" 'A Majority of One," "Parrish," and "A Summer Place"

Imaginative application of camera techniques and masterful lighting combine to give location authenticity to "A Majority of One," which was photographed entirely on the sound stage In addition unobtrusive camera movement adds much to the graphic flow of the story Stradling photographed this production in the 185-to-1 aspect ratio with Eastman Color negative



COMPONENTS OF THE 'Scotchlite process' in operation. Subject, center, is posed in front of small Scotchlite screen. Camera (R) photographs subject through 2-way mirror mounted in front of it at 45 degrees.



SLIDE PROJECTOR (center) projects background image to 45° mirror which reflects it onto screen behind subject. Black gobo mounted on far side of mirror prevents pickup of image from other side.

THE SCOTCHLITE PROCESS

A background projection system for low-budget film production.

By RAYMOND FIELDING

Department of Theatre Arts, University of California, Los Angeles

DURING THE LAST thirty years, a more or less conventional background projection system has been used in the Hollywood theatrical film industry to allow for the combination of background action, photographed on location, and foreground action, photographed within the sound stage. In practice—simply stated—the actors are posed and photographed in front of a large translucent screen onto which the background scene is projected from the rear by a still or motion picture projector. When properly executed, the process offers a convincing composite, considerable saving in location production costs, and superior sound recording quality.

Whatever its advantages, however, traditional background projection is not feasible for low-budget film production in industry and education. The projector employed for moving backgrounds is specially built and must offer precise registration of the background "plate"—a requirement which can be met only by a projection intermittent movement employing pilot pins. The projector must be silenced or "blimped" and interlock motors must be used on both projector and camera to insure synchronism. Such a projector may cost as much as $20,000.

Expensive, custom-built screens must be em-

THE COMPOSITE shot produced by means of the "Scotchlite process." Notice absence of matte line which so often destroys the illusion of the composite in traveling matte work.

HERE, SHADOW OF SUBJECT may be seen on screen. When optical systems of camera and projector are properly aligned with respect to mirror and screen, the shadow will be masked by subject.

SIDE VIEW OF "SCOTCHLITE Process" components. Subject, out of frame at left, is seen reflected on surface of two-way mirror. The camera (R) photographs scene through mirror, producing composite shot.

ployed to insure sharp, bright images. Many of these screens are designed to minimize the "hot-spot" which is nearly always a problem in conventional rear projection. A large sound stage must be devoted to the final photography so as to accommodate both the long throw of the projector behind the screen, and the work area of the set, lights, and camera in front of the screen. Finally, considerable skill is required to illuminate the foreground action so as to avoid splashing light onto the screen and washing out its image. Within the Hollywood industry, background projection cinematography is considered a specialty.

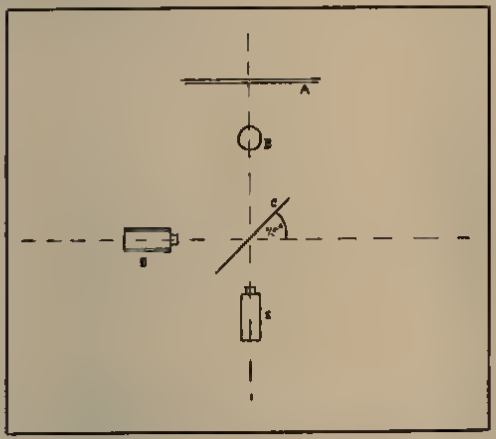


DIAGRAM SHOWS how components of the "Scotchlite process" are arranged on the stage to effect a composite shot in a novel background projection process suitable for low-budget film production. A is Scotchlite screen, B, subject; C, two-way mirror set at angle of 45° to camera lens axis; D, motion picture or side projector; and D, motion picture camera.

Obviously, such a system is not feasible for low-budget 16mm film operations. In the last few years, however, a new type of high-reflectance screen material has been marketed by Minnesota Mining and Manufacturing Corporation, under the name of Scotchlite-brand reflective sheeting, which makes possible a different type of background projection process—one which is suitable for low-budget film production. At the same time, this new system offers characteristics which equal, and in some cases surpass, those of the older, conventional process. At the U.C.L.A. Department of Theater Arts, where one of this country's most intensive professional training programs in cinema is offered, considerable experimentation has been conducted with this novel, low-cost system. Experimentation at U.C.L.A. is, in turn, based upon work conducted at Ohio State University and reported at the October, 1961 Convention of the Society of Motion Picture and Television Engineers.

Fundamentals of the Process

In photographing scenes with the Scotchlite process, the background image is projected from the *front* of the screen rather than from the back. This is accomplished by means of a "two-way"

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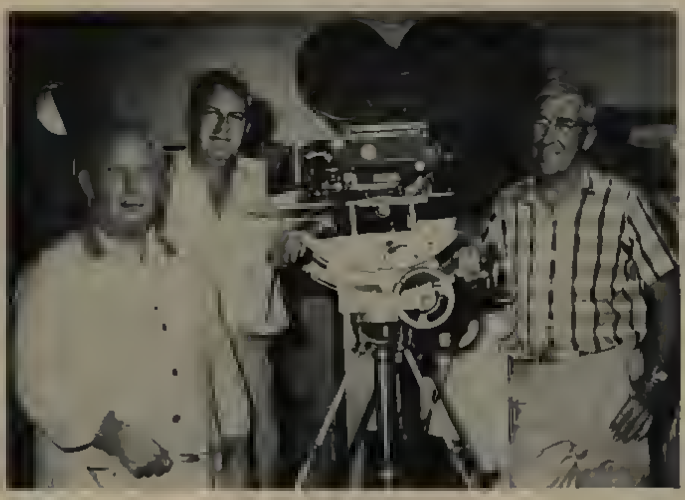
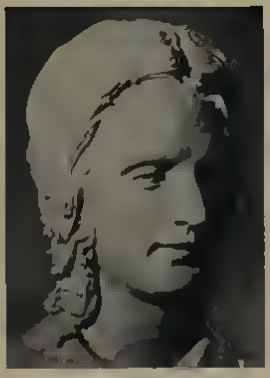
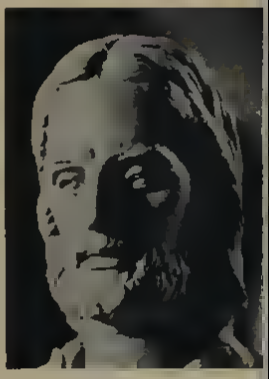


DR MERRELL GAGE, Dr John D Jennings, and Gordon Avil, ASC, sculptor, producer, and photographer respectively of 'The Face of Jesus,' one of the short subjects nominated this year for an Academy Award





THE ILLUSION OF REALITY

How a mass of clay progressively sculptured and imaginatively lighted and photographed, becomes for 21 minutes a visual living being on the screen.

By DARRIN SCOTT

"THE FACE OF JESUS" is a unique short subject which depicts Christ from the age of twelve years until the resurrection in a series of progressively changing sculptured likenesses. With a plastic bust the main subject on the screen for approximately 75 per cent of the film's 21-minute screen time, the photography of such static material obviously posed a number of problems.

While the narration carried its share of responsibility for sustaining interest in the subject, it was necessary also that visual interest be sustained. This accomplishment becomes, for students of cinematography, an exciting study of how the artful use of light and shadow aided by subtle camera movement can give presence and a sense of animation to an inanimate thing.

One of the five short subjects nominated for an achievement award by the Academy of Motion Picture Arts and Sciences this year, "The Life of Jesus" is the product of three diverse talents: Dr. Merrell Gage, Professor Emeritus of Fine Arts of the University of Southern California, who did the sculptures; Dr. John D. Jennings, the film's producer; and Gordon Avil, A.S.C., who directed the photography.

Dr. Gage has followed the same sculpture-cinema techniques dem-

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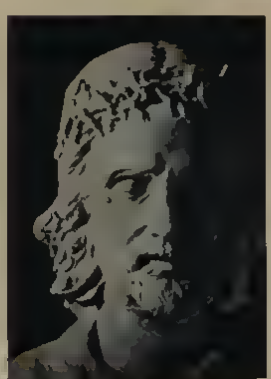

THREE OF THE many faces which Dr Gage achieves through progressive sculpture in "The Face of Jesus" Skillful and varied lighting combined with artful camera handling give a strong sense of movement and life to the subject.

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THE FIREBALL reflector is fabricated of two aluminum sheets bonded to plastic materials and joined together at all four sides to form an air tight envelope. Inflation changes surface contour to flood the light beam. At right is inventor, Ralph Hoge, veteran Hollywood film technician

'NEW LOOK' IN REFLECTORS

And new efficiency, too. The new Fireball flexible, inflatble reflector is lighter, brighter, and focusable.

By FREDERICK FOSTER

CINEMATOGRAPHERS WHO value the contribution to location photography that sunlight reflectors can make when they are well constructed and properly handled by experienced grips, have a surprise in store in the recently-introduced Fireball reflector. Designed and manufactured by Ralph Hoge, veteran Hollywood studio technician and head of Thomas Rentals, which services film producers with grip equipment, the new Fireball marks the first noteworthy improvement in reflector design since reflectors were initially adopted by film makers fifty years ago.

What makes the Fireball different from its predecessors is that it departs from the conventional reflector design of a flat-surfaced plywood or aluminum panel encased in a wooden frame. The reflector element of the Fireball is a flexible plastic-and-fabric envelope surfaced on both sides with a thin coat of aluminum and is inflatable. The latter feature is the crux of the Fireball's unique ability to deliver reflected sunlight in greater volume and in varying beam widths in a manner similar to flooding out a set lamp.

Tests show that one Fireball can do the job of two or three ordinary flat-surfaced reflectors. In a demonstration conducted in the forecourt of Hoge's Hollywood headquarters, a single Fireball reflector was mounted in a conventional reflector yoke and stand, and beamed through an open doorway into the interior of Hoge's workshop. Measuring the reflected light at a distance of 40 feet from the reflector, the meter registered 1400 foot candles with the Fireball completely deflated—its hottest position. When the unit was inflated the prescribed amount to flood out the reflected illumination to a width of approximately 20 feet, the meter registered 200 foot candles, admittedly a significant volume of light for such a wide area and at that distance. Moving in closer with the meter to within fifteen feet of the reflector, where the width of the effective reflected illumination was fifteen feet, the meter registered

Continued on Page 249

HOGE OPERATES the low-pressure bellows to reflate the reflector to desired contour. As with conventional reflectors, the Fireball is dual-surfaced—one hot, the other soft

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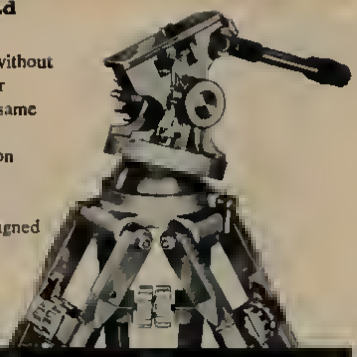

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By JOSEPH HENRY

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This is the theory behind an imaginative, multi-screen color motion picture which is now being prepared for presentation at the 1962 Seattle World's Fair by industrial designer Charles Eames, Venice, Calif. The show, tentatively entitled "The House of Science," will be part of the $9 million United States Science Exhibit (USSE), certain to be one of the dominant features of the Fair.

The overall purpose of USSE will be to stimulate an interest in Science, especially among children and teen-agers, by enabling an estimated 5,000,000 visitors to the exhibit to witness the most complete presentation ever put together on what science is, where it came from and where it is going. USSE will be divided into five main areas, each devoted to one segment of the story of science. (In addition, another area will house a motion picture theater for showing special films). All told, the United States

Continued on Page 245

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ANY MUSIC cut is a good cut, says Hollywood music editor Louis Gordon, if it fits the scene and doesn't offend the ear

Music is essential to almost all professional 16mm films. Here are some pointers on music sources, evaluation, and techniques for adding it to your films.

FILM MUSIC

THERE IS A BASIC rhythm or pattern in all film work. The intelligent use of music aids pacing, carries situations without narration, helps create mood, and punctuates action.

The script, of course, is a prime factor in selecting film music. The visual material alone may be misleading, for in a real sense music and narration help interpret what is pictured. In addition, it is necessary for the producer and music editor to work as partners, for just as the producer knows his film, the music director or editor knows music, and more specifically the music in his library.

In motion picture production, particularly 16mm films, there are four basic sources of music for film music tracks. They are:

1) A live musician playing a piano, organ, guitar, etc., who plays an impromptu score to tell a story with his music. This is usually accomplished after the musician has viewed the work print in projection a few times to get the feel of the show. He then records his music during another and continuous projection of the work print.

2) Library film music may be "laid in" (also against the projected work print) where transitions in mood or theme are accomplished by overlapping selections as the visual transitions occur on the screen. This is known as a blended background music track.

3) Library *edited* music may be recorded separately and fitted to the film by means of sequence straight cutting, specific cueing, or photo alterations. In this instance, the music track is usually positioned on the editing table by cutting work print and music at the same time.

4) When and if the budget allows, live orchestrations are obtained for a specific film. This results in music especially conceived for and fitted to the picture by means of scoring to an edited work print.

In all of the instances described above, the music track is conformed to an edited work print. Whether the music is actually laid against the projected work print or positioned on an editing table, it is best recorded on 16mm magnetic film so that its position in relation to the picture can be kept constant as editing progresses. The completed music track and whatever other sound or effects tracks are required are then mixed and re-recorded to an optical track to accomplish the final printing. In the mixing procedure, the levels of all tracks are adjusted or modified so the dialogue or narration is never buried under the music.

The Mixing Process

By way of explanation, the mixing process involves two runnings (projections) of the work print and the various sound tracks prepared for it. In the first run-through, the picture film and sound tracks are threaded on the projector and sound banks in sync.

As the film is projected, the music director or editor notes the intervals, in seconds, between passages of the narration on a copy of the script provided for the purpose. Then the picture is screened a second time during which the actual mix is accomplished. The procedure goes something like this: if for example there occurs a 12-second pause between two segments of narration, the music director cues the sound engineer to swell the music level during the interval. Then, just before the next segment of narration is to begin, the music volume is lowered to establish background level so not to conflict with the intelligibility of the narrator's voice.

THE COMPLETED music track along with other sound and effects tracks are mixed and re-recorded to an optical track for the final complete print of picture and sound (Photo courtesy Space Tech Labs, Inc)

Music evaluation is a prime consideration of the producer, sponsor and/or the music director or editor. Regardless of the musical mood selected for a film, be it from light to heavy drama, or to background a product production procedure, the film music should complement what the viewer sees on the screen and maintain proper compatibility with the tone of the narration.

The success of all film music, of course, depends on extensive pre-planning with the director. Such planning, when carefully done, results in shooting scenes to lengths pre-determined by the selected music, or of editing the show to the pre-selected film music.

Film laboratories are frequently asked by clients if they can supply specific commercially available music for use in tracking their films. Most laboratories are happy to comply, but usually the cost of obtaining the necessary clearances makes it impractical. Unless music has been recorded specifically for film use, the procedure to obtain clearance is extremely complicated and the cost ranges in the neighborhood of $1,200 per tune.

Just what is the meaning of clearance? Federal law grants to the owner of a copyright on music, literary or graphic materials, the right to control, for a period of 28 years, the reproduction and performance of his work. During that time no one may either reproduce, perform or exhibit such work without the express permission of the copyright holder. These rights are separate from each other, and must be considered as such when determining, for example, whether a motion picture is available for television use. Specifically, the rights are known as "Right of Manufacture" and "Right of Performance."

Importance Of Cleared Music

Pointing up the importance of using only cleared music in commercial motion pictures of any kind is the instance of the judgment awarded last month to the Sam Fox Publishing Company, New York, for the unauthorized use of the Sam Fox copyrighted tune, "Bless 'Em All," in a TV beer commercial. Defendants in the suit, besides the film producer, were the sponsor and its ad agency.

Although there is plenty of cleared music available for films, it often happens that a producer wishes for a particular reason to use some specific musical composition in the sound track of his picture. But the permission to use such copyrighted music is usually both costly and time-consuming to obtain. Producers can avoid these clearance problems — and expenses — by purchasing "cleared" music from dealers and libraries who hold reproduction rights and license to merchandise the music, and who contractually assume responsibility for granting rights of reproduction for films.

Some Labs Can Supply Music

Service laboratories such as Calvin, in Kansas City, maintain music libraries as part of their customer service. Music in the Calvin library is cleared for United States, Canadian and World-wide non-theatrical and television use. Film makers who come to Calvin for processing and other laboratory work can obtain the necessary music for their films there too. From the vast music library, selections are made and recorded synchronously to the customer's edited work print under the supervision of Calvin's Director of Music. Cost includes music use, non-theatrical rights, selection and editing.

What does all this actually cost? Let's take some figures from the Calvin price list: Library orchestral music edited to your work print costs $250

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FILM MUSIC

Continued from Preceding Page

per reel (360 ft. or 10 minutes of 16mm film). The same music blended to your workprint costs $150 per reel. Opening and closing music only from the orchestral library costs $75.00. Library sound effects are $15 for each use with a minimum charge of $45. Cost of music clearance for television or world wide use is 50% of the total music cost. Where the laboratory provides a narrator or voices for dialogue, cost is figured after an analysis is made of the total job.

Is it possible for the small-budget film producer to shave these costs? Perhaps, if he is or is associated with, an experienced film music cutter, knows where to obtain the music he needs and can provide the laboratory with a fully-timed and synchronized music and sound track ready to print with the picture. Otherwise, let the laboratory do it, but get your quotation in advance so that all music costs can be safely figured in the estimate you submit to your client. ■

Ed Note The foregoing is based on a series of articles relating to film music which appeared in recent issues of *The Aperture* monthly journal of Calvin Productions, Inc., Kansas City, Mo.

THE ILLUSION OF REALITY

Continued from Page 230

onstrated in his earlier film, "The Face of Lincoln," which won an Academy Award in 1955. Briefly, "The Face of Jesus" begins with Dr. Gage describing a clay sculpture bust of Jesus at the age of twelve years. Speaking directly to the audience from the screen, he explains that it is a likeness of the boy Jesus as he appeared when his parents found him, after a search of several days, discoursing with the high priests of the Temple. Relating further that nothing is known of the life of Jesus during the ensuing eighteen years, Dr. Gage then deftly re-molds the features of the sculpture to represent Jesus at the age of 30—as the exalted young evangelist looked at the time of his baptism.

Dr. Gage continues to narrate highpoints in the life of Jesus as he works, illustrating each phase by altering the features of the sculpture to indicate the emotional tensions and physical

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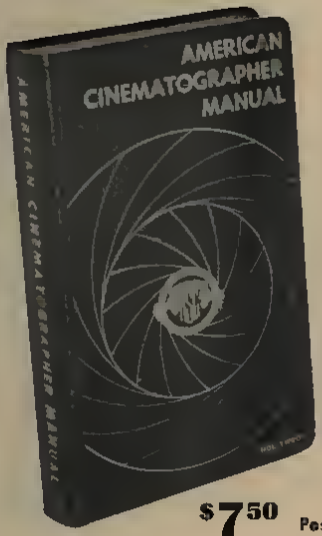

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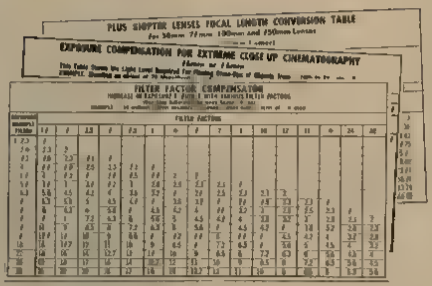
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changes of the subject. We see the stress brought on by Jesus' fasting and temptation in the wilderness, his indignation at the money-changers in the Temple, his sorrow and betrayal at Gethsemane, his trial and conviction by Pilate. Gage skillfully remolds the suffering face, adds a crown of thorns and closes the eyes at the crucifixion. Life is gone—the face is inert in death. Then, once more, the spark of life begins to flare within the clay and the face is restored to that of the radiant risen Christ of the Resurrection. The entire miraculous story is conveyed by means of striking artistry achieved behind the camera as well as in front of it.

Birth Of The Idea

The manner in which the film came into being constitutes an interesting story in itself. It all began, prosaically enough, in a dentist's office. The dentist, Dr. John D. Jennings, is the son of the late Gordon Jennings, for three decades a Director of Special Effects for Paramount Studios.

One day, while Dr. Jennings was ministering to the dental needs of his patient, Dr. Gage, the famous sculptor revealed his ambition to film the face of Jesus. Since Dr. Jennings has a touch of honestly-come by cinema in his blood, his enthusiasm for the project was instantaneous. In the beginning, he merely aided Dr. Gage get the project started, but his efforts were discouraged by some professionals who felt that audience interest would wane if what is basically a single scene were held on the screen for twenty minutes without cutting away to other action.

Dr. Jennings felt that audience interest could be maintained if the subject were photographed with uncommon artistry and imagination. Bearing this in mind, he discussed the project with another of his patients, ace cinematographer Gordon Avil, A.S.C., who immediately caught his enthusiasm. As a result, the idea became a joint production effort between the three men, and they set to work on its realization.

But first there were several important pre-production problems to be solved. Dr. Gage had to arrive at a visual concept of Christ that would be universally acceptable. This has always been something of a dilemma for film producers, which accounts for the fact that the face of Jesus has rarely been shown in films dealing with his life. "King of Kings" had not yet been released, so there was no ready gauge of audience acceptance of such screen image. Most of the Medieval and Renaissance artists had delineated Jesus as a delicate ascetic of fragile countenance. Gage envisioned him differently—as a virile, physically strong man of the outdoors with a rugged face illumined by tender compassion—a man who actually walked the earth, a historical figure rather than merely an etheral spirit.

Next, it had to be decided whether to shoot the picture in black-and-white or color. Tests were filmed in 16mm black-and-white and also 35mm Eastman color. The latter revealed an interesting problem. Even though an attempt was made to play down the color of the sculptor's hands by means of makeup and masking the light, the color film tests indicated that the relatively brilliant flesh tones tended to "steal the scene" from the monotone-gray sculpture clay. This decided the issue and the picture was shot on 35mm Plus X.

"In approaching this subject photographically," recalls Avil, "I was confronted with the paradox that, while the camera technique itself was based on a knowledge of normal production, the situation differed greatly from normal production in that it did not have live characters being directed and moving around a set. And yet, if the result were to be genuinely a *motion* picture it had to have action, and the lighting must lend the sculptured head a three-dimensional quality in order to give it the illusion of life. In an effort to achieve this result we employed lighting effects on the background and varied the lighting on the face—at the same time striving to create the illusion of reality and life in the subject itself. It was a matter of relying on normal production experience to make an unusual or non-normal subject cinematic."

In order to achieve a clean three-dimensional effect without the confusion of multiple shadows on the sculpture, Avil decided to use a minimum number of lighting units to illuminate it. The key light was a 750 watt Baby Spot with fill light provided by a single sealed-beam lamp. A similar unit was also used to light the background. This had to be carefully controlled in order to make the sculpture stand out in relief. With this lighting set-up an illumination level

of 300 foot candles was achieved which permitted working at an average stop of f/4.5.

The surface of the lens of the sealed-beam lamp mentioned above has numerous tiny prismatic indentations each of which, in a sense, acts like a separate lens, producing an overall soft effect in the illumination but with enough concentrated beam to project a shadow. In this way, shadow patterns (such as the cross in the crucifixion sequence) could be projected onto the background merely by uncovering or dimming a sealed-beam lamp mounted behind the appropriate silhouette off-screen.

In the final sequence which portrayed the Resurrection and Ascension, the camera was tied down securely for shooting a series of scenes for precisely matched dissolves. The face of Jesus was first shown haggard and burdened with sorrow in death. Then several progressive static shots were made with sculptor Gage changing the feature bit-by-bit between shots, so that the face of Jesus slowly changed to a life-like countenance, ecstatic and healthy. In the last shot of the series the sculpture was removed from the scene entirely and a straight shot of the background made. In the final editing a continuous series of short, smooth dissolves between these scenes makes the face appear to emerge gradually from death into radiant re-birth until, at the Ascension, it slowly fades out leaving the background clear.

Throughout the progression of the various phases of Jesus' life the light was changed, often radically, to complement the changing moods of the scenes. In somber moments it was subdued—in brighter moments, intensified. But the changes were accomplished so smoothly that they seemed to flow one into another without distraction, even when the key light was shifted from one side of the face to the other.

From time to time the camera unobtrusively dollies in or out, tilting and panning to shoot the sculptor as he models the clay and tells the story. Dr. Gage was at first reluctant to narrate the film himself, but his two colleagues finally persuaded him that a personal narration would add an intimate human touch to the presentation.

The clay medium itself presented mechanical problems which affected the photography. The heavy water-base clay dried out quickly under the lights and had constantly to be kept moist. Moreover, it was found that too much or too little moisture changed the appearance of the clay so that it would not match that in scenes previously shot. Catering to this problem accidentally resulted in one of the best visual effects in the film. The sculpture had been wetted down just prior to filming the trial and crucifixion scenes, so that the clay surface was quite moist. Someone suggested that the scene be filmed that way so that the moisture would suggest perspiration. This was done and the result was most realistic.

Perhaps the main restriction and a formidable problem in filming the picture was the fact that scenes could not be retaken as in normal live-action film production. After any change had been made in the sculpture there was no turning back. The facial sculpture, in the hands of Dr. Gage, was constantly maturing, reflecting various emotions and changing in aspect. No sculptor, no matter how skillful, can go back and exactly duplicate features as he formed them at a some earlier moment. In other words, had something gone wrong photographically it would have been impossible to go back—except all the way back to the beginning. As it was, although filming was a slow and painstaking process, all went smoothly.

When shooting was completed, the precise process of editing began. While much of the narration had been recorded as lip-sync dialogue during shooting, additional narration was later recorded wild and timed to fit the edited closeups. An excellent library of recorded music featuring full orchestral and choral excerpts from Handel's "Messiah" supplied the necessary background and adds greatly to the emotional impact of the film.

Actual photography of the subject, including the tests, consumed a week on the sound stage—the overall production from script to screen requiring just under two months. The resultant film, reverent and artistic, fully justifies the faith and efforts of Dr. Jennings, Dr. Gage and Gordon Avil, A.S.C. It has received merit awards at the Venice and Coronado film festivals, and the Southern California Motion Picture Council has honored it with a Four Star Certificate of Merit, its highest award. ■

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SCOTCHLITE PROCESS

Continued from Page 229

mirror which is placed in front of the camera lens at a 45° angle to the screen. A slide or motion picture projector is placed 90° to one side of the camera and the background slide or film is projected onto the surface of the mirror, from which it is reflected onto the screen. The camera lens photographs the screen image and the actor standing in front of it by shooting *through* the two-way mirror. The arrangement of the components is demonstrated in the accompanying illustrations. If the projector and camera are arranged in such a manner that the axes of their two lens systems are coincident, then an actor standing in front of the screen will matte out his own shadow exactly and a high quality composite will be achieved without a matte line.

The Scotchlite Screen

The key to the process is the screen itself, for without a high-reflectance surface the camera would pick up not only the background image reflected from the screen but from the flesh and costume of the actor, too.

The screen is specially built and consists of a flat, warp-proof support onto which 3-foot wide strips of Scotchlite-brand reflective sheets have been pasted. At U.C.L.A. a large sheet of plate glass, mounted on ¾" plywood, is used for the support. The total cost of such a screen, in dimensions of 5 x 6 feet, need not run more than $50.

The Scotchlite strips have an extremely high reflectance, estimated by the manufacturer to be from 150 to 200 times that of flat white paint, depending upon the type of sheeting employed. Inasmuch as the reflectance of the screen far exceeds that of flesh and costume, any exposure properly based upon the brightness of the reflected background image will fail to record the faintly reflected image which is cast onto the face and clothes of the actor. Any possibility of this unwanted image being recorded is further precluded by the key and fill lighting on the actor which washes it out.

Because the angle of reflection of Scotchlite sheeting is so narrow, any light which strikes the screen from key or fill lamps set 45° or more to

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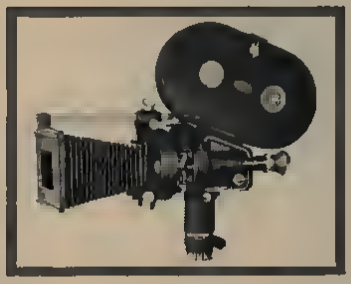

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either side of the camera's optical axis will not be reflected back into the lens with sufficient intensity to register on the film The risk of washing out the screen image with set and actor lights is thereby minimized, allowing for a competent, speedy job of lighting by cameramen who lack prior experience in background projection cinematography.

The Two-Way Mirror

A "two-way" or so-called "detective" mirror is employed to effect coincidence of both camera and projector optical axes. Without such a mirror system the shadow of the actor upon the screen would be photographed by the camera and the illusion of the composite would be destroyed.

Such mirrors are manufactured so that one side is suited for the reflection of light. This side is turned 45° from the camera so as to pick up and reflect the image from the slide or motion picture projector The other side of the mirror is designed to be looked *through*—this side is turned towards the camera lens.

As large a mirror as seems practical should be employed, preferably no

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smaller than 1 x 2 feet. The larger the mirror used, the farther the projector can be placed from it—a distinct advantage in reducing both the size of the shadow cast by the actor and the amount of "hot spot" in the projected image.

The mirror is mounted in a wooden or metal frame which is supported in such a manner as to allow for the vertical, lateral, and longitudinal positioning of the mirror relative to the screen, and the panning and tilting of the reflected image. The adjustment of screen, mirror, and camera is critical; once set, however, any number of shots can be made without further adjustment so long as the positions of these three components remain unchanged. Sturdiness is essential in the construction of the mirror mount so as to eliminate vibration of the mirror surface during photography.

Regrettably, the transmission of such two way mirrors is quite low—anywhere from 15% to 25%. That is, only about 1/5 of the light reflected from the actor and the screen behind him ever reaches the film in the camera, the rest is absorbed by the mirror. This means that a combination of relatively high light levels, high speed emulsions, and large apertures must be employed for such photography. A typical combination of photographic variables for use with a small Scotchlite screen is the following:

Size of Screen: 2x3 feet
Screen Material: Scotchlite #3280 Wide-Angle, Flat-Top Sheeting
Distance from Camera to Screen: 6 feet
Emulsion: Eastman Double X 16mm negative
Projector: 16mm, 1000 watt incandescent lamp, 2 inch f/1.6 lens
Plate: 16mm black-and-white positive print
Camera Shutter Opening: 235°
Camera Lens Aperture: f/5.6

Projection Technique

In contrast to the expensive, heavy, and complicated 35mm arc projectors required for conventional rear projection, standard 16mm audio-visual projectors may be satisfactorily employed with the Scotchlite process. Because of the high reflectance of the screen, normal 1000-watt incandescent projection lamps will produce brilliant screen images. Because the distance from the projector to the screen is so small as compared with the distances required in rear projection, the magnification of the image upon the screen is by no means as great; accordingly, image weave and jiggle is reduced and an expensive pilot pin movement is not necessary to insure proper registration.

Projection from the front of the screen also reduces the amount of "hot spot" which is such a problem in conventional rear projection. Any slight unevenness of illumination which may still remain may be eliminated by introducing a clear sheet of glass between the projector and the mirror and spraying the central area of the sheet with a neutral density spray until the illumination over the entire screen has been equalized.

Finally, for reasons which are not quite clear it is possible to use inexpensive audio-visual 16mm projectors and standard production cameras *without* interlocking motors and still achieve synchronism of shutter movements. At U.C.L.A. all standard production cameras—Mitchell, Maurer, and Arriflex, equipped on different occasions with both synchronous and "wild" motors—have been used in this process with conventional 16mm projectors. In all cases, synchronism was achieved automatically. Like the engineer's example of the bumble-bee, which is aerodynamically unsuited for flight, it shouldn't work—but it does!

Summary

A number of advantages recommend the Scotchlite projection process to low-budget producers. First, it is relatively inexpensive, the screen and mirror components costing no more than $100 to assemble. Second, the process may be employed on small stages inasmuch as both the projection and photography are conducted on the same side of the screen. Third, extensive experience in background projection cinematography is not required of the cameraman inasmuch as splash light is not likely to wash out the projected image. Fourth, because of the relatively short throw, standard audio visual 16mm projectors can be used to provide bright, steady background images. In most cases, such inexpensive projectors synchronize

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satisfactorily with camera shutters without the use of expensive interlock motors. Finally, because the image is reflected *from* a surface, rather than being passed *through* a translucent material, the Scotchlite process oftentimes produces sharper images with less "hot-spot" problems than conventional rear-projection systems.

The reflective sheeting which has been described here is commercially available from most hardware dealers. Certain other components and provisions of this process, however, may be covered by claims of U.S. Patents No. 2,727,429 and No. 2,727,427. Those individuals or organizations which intend to use the process for commercially released films may wish to examine these patents. ■

MULTI-SCREEN MOVIES

Continued from Page 234

Science exhibit will occupy 6½ acres of the 74 acre Fair site.

The role of the Eames composite movie will be critical because it will be exhibited within the first of the areas covered on visitors' normal tour of the Science Pavilion. Its main job will be to condition visitors about to make a two-hour tour of the USSE exhibits. The film has been designed to set the stage by giving audiences a capsule history of science and an insight into the scientific method.

The multi screen system was selected as a logical method for reviewing a subject of such vast proportions in the allotted time of less than 13 minutes. With six screens displaying variations of the same theme, a saturation impression can be created in an extremely short time, according to Eames.

It is worth pointing out that this technique was pre-proven. In 1959, the Eames organization prepared a similar show for presentation at the American exhibition in Moscow. (See "Seven Screens For Moscow," November, 1959, *American Cinematographer*.) This show bore the title "Glimpses of the U. S. A." Its theme was depicting the way Americans live, work and play. Saturation impressions were created with the same multi-screen technique.

The Seattle presentation will, technically, pick up where the Moscow exhibit left off. Based on earlier experiences, the presentation format has

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been varied. In Moscow, seven individual screens were suspended above the audience's eye level. In Seattle, all of the presentations will be in a single, six-segment screen area which is part of one of the walls of The House of Science.

Audiences will enter the area through doors in a wall beneath which projection windows are recessed in sculptured fashion. As spectators gather for the showing, a pattern of synchronized color slides will be projected first to attract and hold audience attention.

The plan to present the Science show in a simultaneous six-screen projection made it possible to build a continuity device into the presentation. The continuity is carried on to a seventh and larger screen which is centrally located and overlaps all of the other presentation spots. The six basic screen areas measure 9'x16'. They are arranged in two rows of three screens each, as pictured. Six-inch strips separate and define the screen areas. The seventh and central screen is 17'x21'. Visual area coverage for slides will be a 200° field of view.

The show will open with an animation sequence running between four and four-and-one-half minutes. The show derives its name from this opening section, which depicts the growth of the House of Science from pre-Hellenic times, approximately 500 B.C. One man, with an inquiring mind, expounds new theories before the society of his day. He builds a shelter to house his beliefs and is joined by others.

Gradually, as new areas of scientific interest evolve through the ages, rooms and wings are added. Each new segment conforms to the architectural style of the times during which it was born.

This building block technique also provides a device that introduces the audience to the vastness of the show itself. The animation sequence starts with one screen and eventually spreads to cover the total area. It depicts the acceleration of scientific development in modern times. Between 500 B.C. and 1850 A.D., the House of Science grows slowly. Then, rapid additions help make the point that more than 90 per cent of all scientific discovery has been achieved in the last 110 years.

From this opening sequence depicting the evolution, or history of science, a series of presentations follows that shows the level achieved by science today. The aim is to show that science is not simply the business of progress through science, but an all-encompass-

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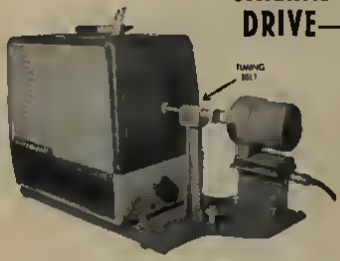

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ture cameraman, Archer Goodwin. The animation sequence was designed by Alan Fleck, of the Eames organization.

To photograph material for some sequences, Goodwin and his crew traveled throughout the United States. Prominent scientists were photographed in their laboratories, observatories, field locations and so on. All of the motion picture footage for this show was shot on or converted to 35mm Eastman Color. Where duplicates of exisitng print materials were made, Goodwin used Eastman Color Internegative Film, Type 5270. Original footage was shot on Eastman Color Negative Film, Type 5250.

Because careful blending and integration of the wide variety of pictorial material was essential to the successful presentation of the show, Goodwin set up a composite editing system to facilitate editing. The first step was to cut a frame from the print of each scene on motion picture film and mount it on a 3"x5" card having an aperture the size of the film picture area. The various cards were then placed on a hack-lighted panel of frosted glass for study. Here they were shifted around and finally arranged in a tentative sequence for cutting the film. Each card carried information as to gross footage available in the cut and its respective screening time.

The editing job was most precise from start to finish with each film strip held to an exact frame count. This was necessary because of the synchronized six-projector system used for the multi-screen presentation of the show. Registration and synchronization of each of the six prints was extremely vital to achieving the total effect aimed for.

To insure this precise synchronization and to simplify maintaining it during each day's operation of the show, the prints have control signals recorded on a magnetic strip on one edge of the film; these monitor the timing and control the shutter pitch on the respective projectors. The sound track for the complete presentation is recorded separately on another 35 mm film and played back during projection on a multi-track magnetic film reproducer.

The chief objective of this multi-screen motion picture presentation is to condition Fair visitors entering the United States Science Exhibit to ab-

sorb the scientific knowledge to which they will subsequently be exposed as they proceed through the USSE auditorium. These visitors, for the most part, will be coming into the area following a variety of experiences ranging from monorail rides to girlie shows. The role of the novel multi-screen prologue will be to direct their attention to a different but no less entertaining attraction of the Seattle World's Fair. ■

"FIREBALL" REFLECTOR

Continued from Page 232

600 foot candles. The one Fireball reflector was more than adequate to illuminate the interior of the workshop for acceptable photography.

In comparing the Fireball to the hard-panel reflectors generally in use in the studios, Hoge points out that out of a hundred such reflectors in a studio's grip department, only a very small percentage is found in good usable condition when a number of them are requisitioned for a location call. Plywood and pressboard reflectors tend to warp or develop undulations in the surface which reduce their ability to reflect a flawless beam of light.

Old style reflectors weigh from 17 to 35 pounds each as compared to 6 pounds for the Fireball—an important factor, Hoge points out, when a company must ship grip equipment to a distant location by air.

The Fireball is the standard 4' x 4' size and mounts in all standard yokes. The inflatable envelope is fabricated of two bright aluminum sheets bonded to plastic materials and pressure-sealed at the edges on all four sides. Through grommets inserted along the fused margin, strong rubber bands are inserted which secure the envelope to the wooden frame. Thus, not only is the envelope itself flexible but the flexible mounting insures proper rigidity and a smooth surface regardless of the degree of inflation of the envelope.

As with conventional reflectors, the Fireball has one hard and one soft surface. The latter is achieved by special treatment of the aluminum sheet on one side with lenticularizing dyes which form a myriad of minute, prism-like papules on the surface. The opposite side is untreated. The Fireball

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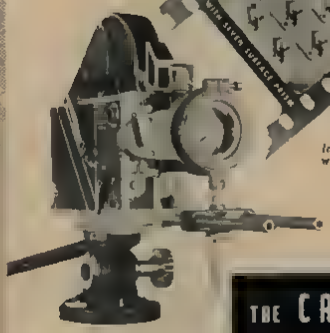

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can be supplied in gold foil where a warmer type of reflected light is required, but this is a special order item, according to Hoge, who says that gold foil reflectors are not as popular today as they once were.

The unique and exclusive feature of the Fireball, of course, is its ability to flood out the beam of reflected light. This is accomplished by inflating the envelope and watching the light beam spread out in the scene until it has reached the desired limits or until the desired intensity in foot candles is reached.

In one side of the envelope, near the bottom is a valve to which is attached the tube from the inflating bellows supplied for the purpose. Usually three or four movements of the bellows are all that are required to inflate the reflector to the desired contour. The tube may then be removed and the valve capped. It is even possible, as Hoge demonstrated, to adequately inflate the envelope by mouth, as only about ½-pound of air pressure is required, in adequate volume.

Because of the rubber-band suspension system, there are no hard margins in the reflected light beam of the Fireball. The margins are soft, almost indistinguishable, and because of this quality it is almost impossible to detect vibration or movement in the light reflected by the Fireball when used on a windy day or when hand held as is often done on a camera car or other moving vehicle.

So strong and penetrating is the light of the Fireball reflector, they have been successfully used underwater to photograph in the clearwater springs and pools of Florida. Sam Leavitt, A.S.C., who is presently photographing location scenes in Hawaii for Columbia Pictures' "Diamond Head," has been able to effectively light dense tropical scenes for color photography there with the aid of Fireball reflectors.

Ralph Hoge, better than any other industry veteran in Hollywood perhaps, knows the value of competent and effective grip equipment. A veteran grip himself, he was an assistant to the late Gregg Toland for 20 years. Following Toland's death, he joined Lee Garmes, A.S.C., and worked as head grip during many of his picture assignments. Several years ago he set up Thomas Rentals in Hollywood through which he services studios and independent producers with conventional grip equipment as well as with the many specialized items of equipment of his own design which he manufactures. The Fireball reflector is the latest in a long line of equipment developments by Hoge, and many in the industry predict it could easily qualify for an Academy technical award. ■

"THE FOUR HORSEMEN OF THE APOCALYPSE"

Continued from Page 223

Fortunately, some of the key scenes had already been shot, but many still remained to be filmed. The company returned to Hollywood, where Krasner undertook the formidable task of lighting and photographing matching action that would intercut directly with the footage shot on location.

Before leaving France, however, several interesitng sequences were filmed in less conspicuous locales. One of these, shot in the Paris subway, involved extensive dolly shots and required two days of rebearsal before being photographed. The sequence featured crowds of French children and adults, plus complicated action in which a Gestapo officer is pushed off the platform by the protagonist into the path of an onrushing train.

Shooting in classrooms of the Sorbonne included the usual interior location problem of low ceilings with no place to hang lights. Lit entirely from the floor, the resultant scene has the true feel of having been shot in an actual interior.

One of the most pictorially striking sequences in the film was shot in the magnificent gardens of Versailles with its towering trees and the ground aflame with autumn foliage. Actually, the scene was filmed in November, long after the leaves had departed from the trees. A stickler for realism and pictorial effect, Director Minnelli had his Art Director and staff go to the south of France and obtain every available autumn leaf. Boxcar loads of red and yellow leaves were shipped up to the location and painstakingly affixed to the trees to provide a stunning background for the highly dramatic sequences, the long shots of which were filmed in a slight overcast that produced a strangely luminous quality that was most effective pictorially. Some time later, inside an M-G-M sound stage, Krasner photographed close shots to intercut directly with these scenes. Here the peculiar quality of daylight was perfectly reproduced in the scene by means of incandescent lamps.

On the M-G-M sound stages, twenty-five thousand square feet of stage space was packed with a total of 90 individual sets, ranging from the sprawling Argentine mansion living and dining rooms to the dingy attic of a French farmhouse.

Several Paris exteriors, which were unfinished when shooting permits were cancelled in that city, had to be staged at the studio. These scenes were filmed after much careful planning and study to insure that the photographic quality would perfectly match the location photography. The Art Director had brought back color photographs of all the major locales taken from exact vantage points to match those of the scenes already shot, and matching set units were reproduced in exact detail on the sound stages of the studio.

An outstanding example of this attention to studio set detail is a tensely dramatic sequence played in the rain on the set of a Seine bridge with Notre Dame in the background. This sequence was filmed under tarpaulins on the backlot so that the lighting could be precisely controlled. A huge cyclarama with the cathedral painted on it and lights behind it was supplemented by apartment buildings in foreshortened scale running along the sides. Cars making turns along the street added to the effect of convincing realism.

The march of a lengthy column of Nazi occupation troops down the Champs Elysees was also staged and photographed on a large exterior set erected on the studio back lot. An actual shot of the Arc de Triomphe was printed in later by means of the traveling matte process to form an authentic background. Similar realism is evident in a student riot sequence staged on a set representing a Left Bank street and sidewalk cafe.

In shooting the famous tango sequence (immortalized by Rudolph Valentino in the first film version of "Four Horsemen") Krasner achieved a *tour de force* of camera handling

Continued on Page 252

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"THE FOUR HORSEMEN"

Continued from Page 250

in following the dancing couple all the way around the room in a continous 360 degree pan shot The camera was placed in the center of a set representing Maxim's Lighting units were hung around the perimeter with intensities carefully balanced to insure consistent light in all areas No lights could be placed on the floor, of course, but a unit mounted on the camera provided sufficient fill illumination

In this sequence, as well as in several other interior sequences of the film, Krasner employed an unusual technique to achieve a particular photographic quality He used a #1 fog filter which, as he points out, enhances true color, skin tones and textures and creates a luminous quality in the shadows The technique does not work well in flat light or in a room with light walls Krasner points out Moreover, the highlights have to be built up to a slightly higher contrast level in order to counteract any tendency toward flatness

Krasner, who in 1954 won an Academy Award for color photography of "Three Coins in the Fountain," is actually partial to low key color photography "Four Horsemen" gave him an opportunity to infuse many sequences with this type of mood treatment—especially one highly dramatic passage which takes place in an Argentine mansion near the beginning of the picture. The main action is played in a dining room with large French doors opening onto a patio To simulate the warm tones of the candlelight, which ostensibly illuminates the room, MT-2 filters were placed over the set lamps As the sequence develops, a storm breaks outside and cold flashes of lightning slash through the warmth of the room, effectively complementing the emotional storm building up in the action.

In this sequence as in several others, the camera is moving a great deal of the time, in the course of which as many as twenty-five different camera positions are established in one continuous shot, but so smoothly coordinated are these moves with the action of the players that camera movement, as such, is never obvious

The final sequence in the film builds to an effective photographic as well as dramatic climax. The protagonist arrives at a coastal farmhouse, which has been taken over as a Nazi stronghold; but the enemy (as personified by his own storm trooper cousin) discovers that he is a member of the underground and is preparing to liquidate him Tipping off his position to the Allied command by means of an electronic signal, which brings a fleet of Allied bombers to the scene, the hero watches through a window as the bombs blow all the farm buildings (and finally him) to bits

The exteriors for this sequence and some of the interiors were filmed in and around a 600 year-old French farmhouse which had actually been used during the war as a headquarters for the underground A matching breakaway set was constructed later at the studio where the farmhouse demolition scenes were shot. As the sequence develops the light in the room gets darker and darker ending up in a very low key to indicate the approach of evening This was accomplished by placing banks of lights on dimmers carefully timed to gradually diminish the light down to a level of 175 foot candles. The set had a low-beamed ceiling which precluded the use of overhead lighting and required that small lighting units be hidden in odd places

The set itself was a carefully constructed breakaway room mounted on

JOHN SEITZ, A.S.C., photographed the original Four Horsemen Of The Apocalypse at the old Metro Studios in Hollywood over 40 years ago It was a silent picture, in black and-white Begun in mid summer of 1920, picture was shot in seven months, cost $700,000 New version photographed in color by Milton Krasner, A.S.C., cost several million dollars, was over a year in making

John Seitz A.S.C

Most memorable experience for Seitz was shooting the effects sequence of the Four Horsemen astride chargers and galloping through billowing clouds of smoke

Initial scenes for sequence were shot on wooden runway between two stages on Metro lot, with the horses and riders fighting their way through smoke blown into set by wind machines Later, extended scenes of same action were filmed on an unpaved street on city's outskirts The original 'Four Horsemen' starred Rudolph Valentino and Alice Terry and was directed by Rex Ingram

hydraulic rockets so that it could be made to shake realistically during the bombing. The camera was set up outside the room on a boom. A painted background showing other farm buildings was placed outside the window, but as the action developed this was replaced by a miniature matching process plate showing the buildings actually exploding as the bombers make their run. As a bomb strikes the room, precisely rigged beams crash down in pre-determined positions to pin down the actors without injuring them.

The most spectacular photographic effect in the film, and one which audiences will long remember, is the breathless ride over the earth and through the blazing clouds of war by the symbolic four horsemen mentioned in the Bible: Conquest, War, Pestilence and Death. The stunning visualization of this abstract concept is a technical achievement of the highest order and is the result of ten weeks of precise planning, staging and filming.

Thirteen weeks before the scenes could be photographed, four horses were selected for unusual and rigorous training with their riders. For sixty-five working days the horses were drilled in their roles. They were required to gallop at speeds ranging from 20 to 30 miles per hour under hot multi-colored lights through barrages of fire and smoke, and all without shying or once moving out of camera range.

Krasner planned the photographic treatment of this sequence in careful detail with Minnelli and Special Effects Director A. Arnold Gillespie. He laid out the camera angles and pre-lit the set to effectively highlight the ghostly figures and the billowing smoke which surrounded them. But just as shooting was about to start Krasner was called by M-G-M to begin filming of "Sweet Bird of Youth." Leaving his gaffer and camera crew to assist in the shooting, he turned over photography of the sequence to veteran cinematographer Lee Garmes, A.S.C.

Since then, Milton Krasner has completed photography of M-G-M's "Two Weeks in Another Town" (also with Director Minnelli) and is currently engaged in filming the fifth and final segment of the Cinerama M-G-M epic, "How the West Was Won." ■

BEHIND THE CAMERAS

Continued from Page 221

WILLIAM MARGUILES, ASC, "87th Precinct"*

JACK MACKENZIE, ASC, "Ichabod and Me"*.

WALTER STRENGE, ASC, "Wagon Train"*

MACK STENGLER, ASC, FRED MANDL, ASC, "Leave it to Beaver"*

TWENTIETH CENTURY-FOX

WINTON HOCH, ASC, "Five Weeks in a Balloon" (CinemaScope, DeLuxe color; Irwin Allen Prods.); with Red Buttons and Sir Cedric Hardwicke. Irwin Allen, producer-director.

ARTHUR IBBETSON, "Nine Hours to Rama" (CinemaScope, Deluxe color, Red Lion Prod., shooting in India) with Horst Buchholz and Jose Ferrer. Mark Robson, producer-director.

LEON SHAMROY, ASC, "Cleopatra" (J. Mankiewicz Prod.; Todd-AO; shooting in Rome) with Elizabeth Taylor and Richard Burton. Joseph Mankiewicz, director.

TV GRAPHIC STUDIOS—New York

TED PAHLE, ASC, Name Band Musicals (color). Bernie Rubin, director.

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LEWIS JENNINGS, "Bronco"*

JACK MARQUETTE, CARL GUTHRIE, ASC, HAROLD STINE, ASC, LEWIS JENNINGS, "77 Sunset Strip"*

HAROLD STINE, ASC, JACK MARQUETTE, BURT GLENNON, "Surfside Six"*

RAY FERNSTROM, ASC., ROBERT TOBEY, ASC, BURT GLENNON, "Hawaiian Eye"*.

ROBERT HOFFMAN, JACK MARQUETTE, "Room for One More"*.

PHIL LATHROP, ASC, "Days of Wine and Roses" (Martin Manulis-Jalem Prod., shooting at Bay Meadows) with Jack Lemmon and Lee Remick. Blake Edwards, director.

OSSIE MORRIS, "Term of Trial" (Remus Prods.; shooting in Ireland) with Laurence Olivier and Simone Signoret. Peter Glenville, director.

HARRY STRADLING, ASC, "Gypsy" Mervyn LeRoy Prod.; Technicolor) with Rosalind Russell and Karl Malden. Mervyn LeRoy, director.

WILLARD VANNERVEER, "Cheyenne"*,

ROBERT KRASKER, "Act of Mercy" (Cavalcade-Concorde Prod.; shooting in Spain) with Leslie Caron and David Niven. Anthony Asquith, director.

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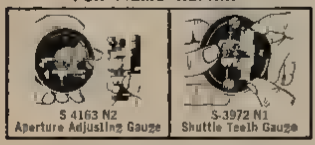

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